

Work Order ID 128659

February-05-15 8:42:20 AM

128659

Page 1

Item ID: D119-796-141

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Stop

NS2

Start Date: 1/21/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 1/21/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D119-796-141

Rev. E A.P.

120

120

Packaging

Packaging

Packaging

Memo

0.00

0.00

CHG002

JW

15-1-21

130

130

CNC Bend 2

CNC Alpha 160 Bender

BENDING MACHINE - CROSSTUBES

Memo

Bend tube as per Dwg D119-796-141 using CNC bender program

0.00

0.00

JW
BL

15-1-22

140

140

QC

Quality Control

QC15- Crosstube Dimensional Check

Memo

0.00

0.00

DD

15-2-5

DAS
03
9-88

DAS
03
9-88

Work Order ID 128659

128659

Page 2

February-05-15 8:42:20 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/15 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/21/15 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150	Crosstubes	0.00							
-----	------------	------	--	--	--	--	--	--	--

150

Crosstubes	Memo	0.00							
------------	------	------	--	--	--	--	--	--	--

Crosstubes ***** ENSURE PROPER JIG POSITIONING *****

1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT _____ location #7 & # 212 ULF using jig
 DT _____ and DT _____ as per QSI 10

4-Identify cuff position and Batch # on each and identify tube as per dwg D119-796-141.

5- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***
 Inspect surface damage

6- Deburr and realodine cuff.

160	QC5- Inspect part completeness to step on W/O	0.00							
-----	---	------	--	--	--	--	--	--	--

160

QC	Memo	0.00							
----	------	------	--	--	--	--	--	--	--

Quality Control *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Handwritten notes: 15/01/22, BL 15/01/22, and a signature.

Handwritten notes: 1, EB, and 15-01-22.

Work Order ID 128659

February-05-15 8:42:20 AM

128659

Page 3

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/15 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/21/15 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170		0.00							41 9-89
170						1		15-01-22	
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1- CLEAN CROSSTUBE WITH WASH'N WIPE								
180	Outsource process - NDT per QSI038 4.1	0.00							
180								15-01-30	4
Outsource2	Memo	0.00						15-01-30	
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Liquid Penetrant Inspection as per QSI 038Or								
	Issue P/O: 27244 LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190		0.00							
190	Packaging								
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								

See ORIG w/o
ATTACHED

Work Order ID 128659***128659***

Page 4

February-05-15 8:42:20 AM

Item ID: D119-796-141

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15

Start Qty: 1.00

1

Cust Item ID:

Required Date: 1/21/15

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run

Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.00

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Inspect for damage & ensure results are as per Dwg D119-796-141

DAS
38
9-89

15-02-10

210

0.00

210

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1- PRESSURE WASH AND THEN USE WASHH'N WIPE TO CLEAN
CROSSTUBE BEFORE CHEMICAL CONVERSION

BL 15/01/26

220

QC7-Inspect Chemical Conversion Coat

0.00

220

QC

Memo

0.00

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

DAS
41
9-89

15-1-26

Work Order ID 128659

February-05-15 8:42:20 AM

128659

Page 5

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/15 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 1/21/15 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	SprayPaint	0.00							
230									
SprayPaint	Memo	0.00							
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1-Prime inside and outside crosstube as per QSI 005 4.2								
	PRIMER batch: <u>129807</u>								
	Start time: <u>10:00</u>								
	Finish time: <u>11:00</u>								
	clear: <u>130762</u>								
240	QC14- Inspect Spray Paint	0.00							
240									
QC	Memo	0.00							
Quality Control									

DAS
41
9-89
15-2-4

Work Order ID 128659

February-05-15 8:42:20 AM

128659

Page 6

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/15 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/21/15 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

242

242

Crosstubes

Crosstubes

Memo

1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2- Install ~~DS150-1~~ ⁵¹⁵²⁻⁰⁴¹ with proseal 890 on concave surface, 0.100" MIN thick as per dwg using DT10089

Proseal Batch: 130986

EXP: 6/15

PROSEAL CURE TIME 72 HOURS:

Start: 15-02-06

Finish: 15-02-09

3- Install radius block as per dwg

4- Mask underside of crosstube as shown as per dwg prior to painting.

244

244

QC

Quality Control

QC5- Inspect part completeness to step on W/O 0.00

Memo

0.00

DAS

38

9-89

15-02-10

CR 1502-08

A.R.
15-02-09

February-05-15 8:42:20 AM

1 2865.9

Page 7

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 1/21/15 **Req'd Qty:** 1.00 ***1***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
246	Spray Painting per OSI005 4.2	0.00							DAS 11

246

Spray Painting per QSI005 4.2

0.00

246

SprayPaint

Memo

0.00

Spray Painting

1- Paint outside crosstube as per QSI 005 4.2

PAINT batch: 131233

Start Time: 1100

Finish Time: 11:23

2- Remove masking and apply matte clear coat as per dwg

Matte Clear Batch:

N/A

248

QC14- Inspect Spray Paint

0.00

248

QC

Memo

0.00

Quality Control

Work Order ID 128659

February-05-15 8:42:20 AM

128659

Page 8

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/15 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/21/15 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Crosstubes	0.00							DAS
250									41
Crosstubes	Memo	0.00							9-89
Crosstubes	Assemble as per Dwg D119-796-141								15-2-8

1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2- Install supports, clamp with the proper position with Proseal 890 per dwg D119-796-141 and QSI 015

A/R Proseal 890 Batch: 130986
EXP: 6/15
PROSEAL CURE TIME 72 HOURS:
Start: 15-2-8
Finish: 15-2-11

Torque all clamps to 80-100 IN-LBS.

Work Order ID 128659

128659

Page 9

February-05-15 8:42:20 AM

Item ID: D119-796-141

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 1/21/15 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
260	QC5- Inspect part completeness to step on W/O	0.00				1			DAS 38 9-89
260									15-02-10
QC	Memo	0.00							A.P.
Quality Control	***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED AS PER DWG.***								15.02.12
270	Pick Kit	0.00							
270									
Packaging	Memo	0.00							
Packaging									
280	QC4- 100% Inspect kits for completeness	0.00							
280									
QC	Memo	0.00							
Quality Control									

15.02.12

Work Order ID 128659

128659

Page 10

February-05-15 8:42:20 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/15 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/21/15 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
290	Packaging	0.00							
290									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D119-796-141								
300	QC21- Final Inspection - Work Order Release	0.00							
300									
QC	Memo	0.00							
Quality Control									

SHIPPED TO ERA
126742

15-02-13

15/2/17

Picklist Print

February-05-15 8:42:19 AM

Page 1

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15

Required Date: 1/21/15

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.09.03 NEW ISSUE DD VERF:JLM IPP
REV:B 14.10.15 AS PER REV.B DD VERF:JLM IPP REV:C
14.11.19 AS PER REV.C DD VERF:JLM IPP REV:D 14.12.12
AS PER REV.pd1 DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
CR3212-4-07 *CR3212-4-07* CHERRY RIVET		Purchased	No				Each	231.0000		16	DAS 41 9-89	15-2-8	

**

Location	Loc Qty	Loc Code
ST320	231	
m126320	31	
m131317	200	

16

D119-796-141TRN

Manufactured No

D119-796-141TRN

Crosstube Turning Detail

**

Location	Loc Qty	Loc Code
LG	3	
126937	1	
126938	1	
126939	1	
prelim	1	
128173	1	

SEE ATTACHED
w/o 9/8

D2873-043

Manufactured No

D2873-043

Nut Plate Assembly

**

Location	Loc Qty	Loc Code
LG052	8	
125127	8	

14

DAS
41
9-89

15-2-8

Picklist Print

February-05-15 8:42:19 AM

Page 2

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15

Required Date: 1/21/15

Start Qty: 1.00

Required Qty: 1.00

D5123-3 Manufactured No

Each 80.0000 4

D5123-3

Clamp Cushion

**

Location

Loc Qty

Loc Code

lg55

80

126747

72

8

Each

5.0000

2

**

DAS

41

9-89

15-2-8

D5124-1 Manufactured No

D5124-1

Fwd Support

Location

Loc Qty

Loc Code

LG053

2

123809

2

LG055

3

3

Each

12.0000

2

**

DAS

41

9-89

15-2-8

D5150-1 Manufactured No

D5150-1

Step Post

Location

Loc Qty

Loc Code

prelim

12

124084

3

127170

9

A.P.
15.02.09

SPO 15/02/09

D5152-041 x 2

B129383

(2)

Picklist Print

February-05-15 8:42:19 AM

Page 3

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/15

Required Date: 1/21/15

Start Qty: 1.00

Required Qty: 1.00

MS21920-24

Purchased

No

Each

66.0000

4

MS21920-24

Clamp

~~1/21/15~~
DAS

41

9-89

15-2-8

Location

Loc Qty

Loc Code

FG

2

117998

2

LG050

64

108258

1

120079

13

m129317

50

4

Work Order Summary

February-05-15 8:42:32 AM

Page 1 of 2

Criteria : Work Order ID: 128659 Item ID: D119-796-141 Product Family CROSSTUBES
Work Order Start Dates 1/21/15 to 1/21/15 11:59:59 PM Work Order Required Dates 1/21/15 to 1/21/15
11:59:59 PM

All References

Work Order Status Released

Work Order ID	128659	Required Qty	1.0000	Status Code	Released
Item ID	D119-796-141	Accepted Qty	0.0000	Scrap Qty	0.0000
Item Name	Fwd Crosstube, STD w/o Peg Steps (MKII)				
Current Acct Value	\$3,628.792				

Start Date	1/21/15	Required Date	1/21/15	Completed Date	
Standard	** Actual **	** Acct. Value **	** Variance **	** Variance % **	
Direct Costs	Total	Each	Each	Each	Each
Material	\$0.000	\$0.000	\$534.130	\$534.130	100.00%
Labor	\$448.707	\$0.000	\$382.119	\$382.119	100.00%
Outplant	\$0.000	\$0.000	\$188.768	\$188.768	100.00%
Variable Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
Fixed Burden	\$988.113	\$0.000	\$1,009.435	\$1,009.435	100.00%
Material Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
** Total **	\$1,436.820	\$0.000	\$2,114.452	\$2,114.452	

Work Center CNC Bend 2

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
lavo02												
	1/21/15											
130			0.00	0.00	5.56	5.56	1.00	\$0.000	\$108.560	\$250.067	\$0.000	\$358.62
whit01												
	1/21/15											
130			0.25	0.25	0.00	0.00	1.00	\$4.824	\$0.000	\$11.113	\$0.000	\$15.93
130			0.00	0.00	5.56	5.56	1.00	\$0.000	\$108.572	\$250.094	\$0.000	\$358.66
Total:			0.25	0.25	11.11	11.11	3.00	\$4.824	\$217.132	\$511.273	\$0.000	\$733.23

Work Center Crosstubes

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
lavo02												
	1/22/15											
150			0.00	0.00	5.32	5.32	1.00	\$0.000	\$104.029	\$216.257	\$0.000	\$320.28
whit01												
	1/22/15											
150			0.00	0.00	5.03	5.03	1.00	\$0.000	\$98.378	\$204.510	\$0.000	\$302.88

February-05-15 8:42:32 AM

Work Order Summary

Page 1 of 2

Total:	0.00	0.00	10.36	10.36	2.00	\$0.000	\$202.407	\$420.766	\$0.000	\$623.17
---------------	------	------	-------	-------	------	---------	-----------	-----------	---------	----------

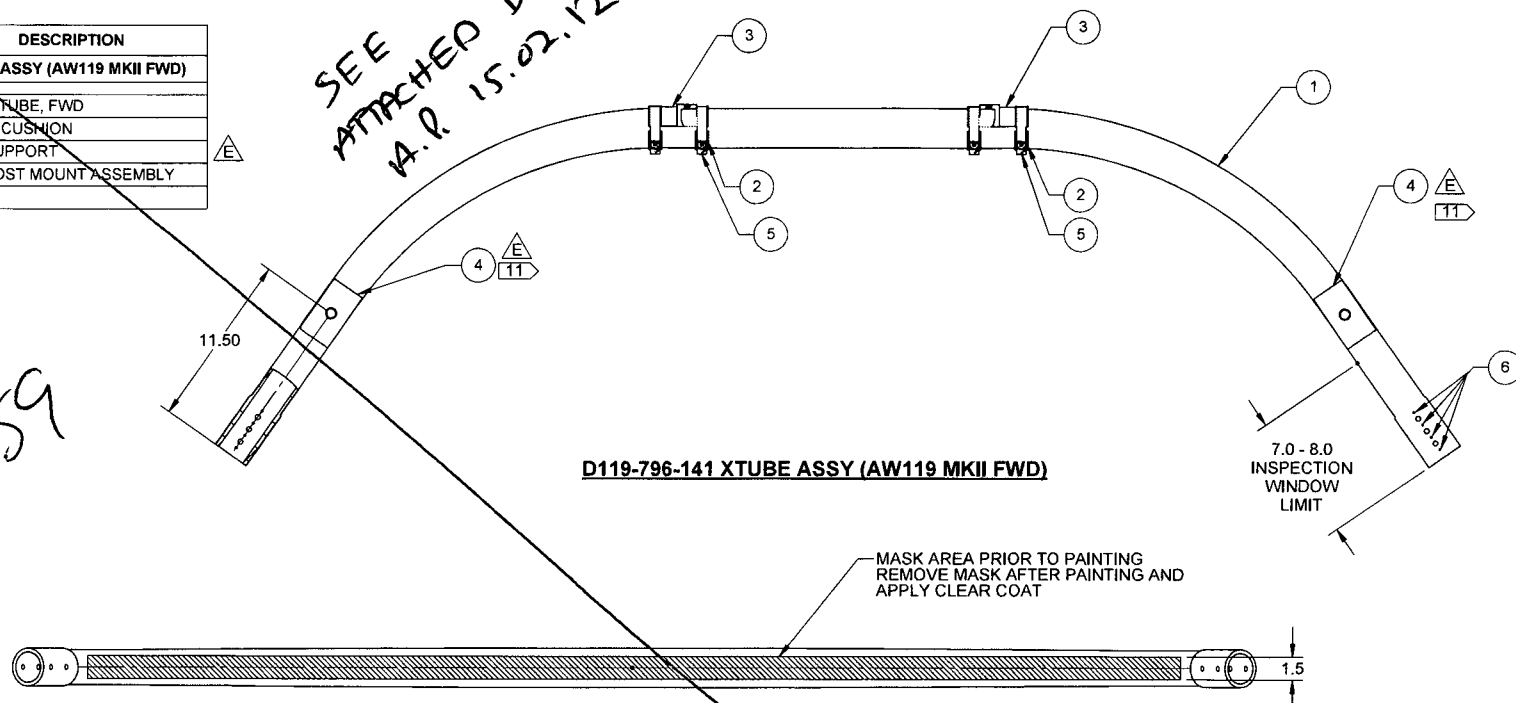
Work Center SprayPaint

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
SHEL02												
	1/30/15											
230			0.00	0.00	0.20	0.20	1.00	\$0.000	\$3.887	\$8.953	\$0.000	\$12.83
230			0.00	0.00	0.55	0.55	1.00	\$0.000	\$10.686	\$24.616	\$0.000	\$35.30
	2/01/15											
230			0.00	0.00	0.50	0.50	1.00	\$0.000	\$9.770	\$22.505	\$0.000	\$32.27
Total:			0.00	0.00	1.25	1.25	3.00	\$0.000	\$24.343	\$56.074	\$0.000	\$80.41

ITEM	QTY	P/N	DESCRIPTION
	X	D119-796-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-796-141BND	CROSSTUBE, FWD
2	4	D5123-3	CLAMP CUSHION
3	2	D5124-1	FWD SUPPORT
4	2	D5152-041	FWD POST MOUNT ASSEMBLY
5	4	MS21920-24	CLAMP

SEE
ATTACHED DWT
A.R. 15.02.12

ULO
128659



D119-796-141 XTUBE ASSY (AW119 MKII FWD)

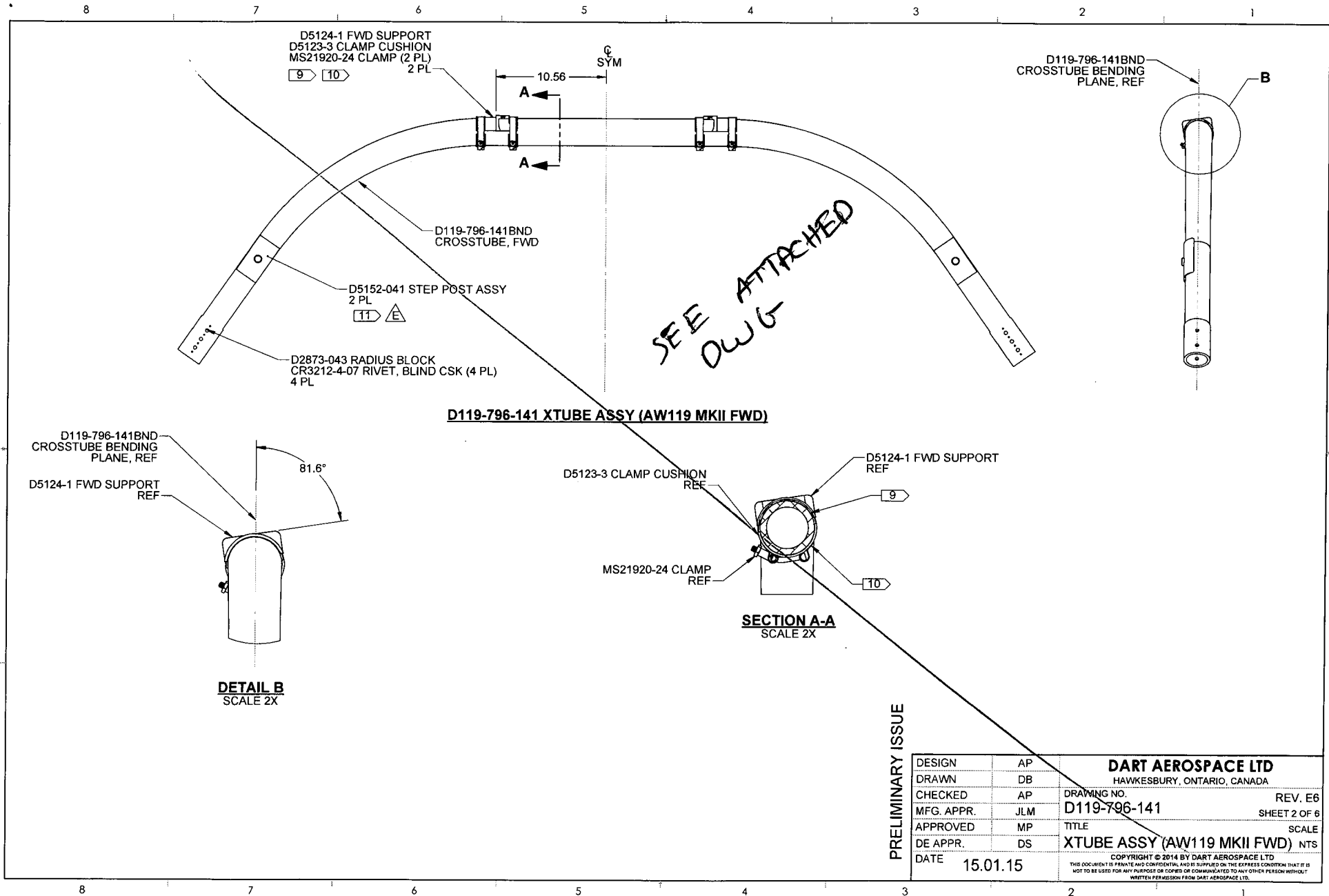
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: MASK UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA), PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.26 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) AFTER FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. APPLY A 0.100 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4° OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY, THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100 MIN THK. LOCATE D5152-041 USING TOOL DT10089.

E	D5152-041 STEP POST ASSY WAS D5150-1 STEP POST, SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER	DB	15.01.15
D	ADD D5150-1 STEP POST (2X), MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES, RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE

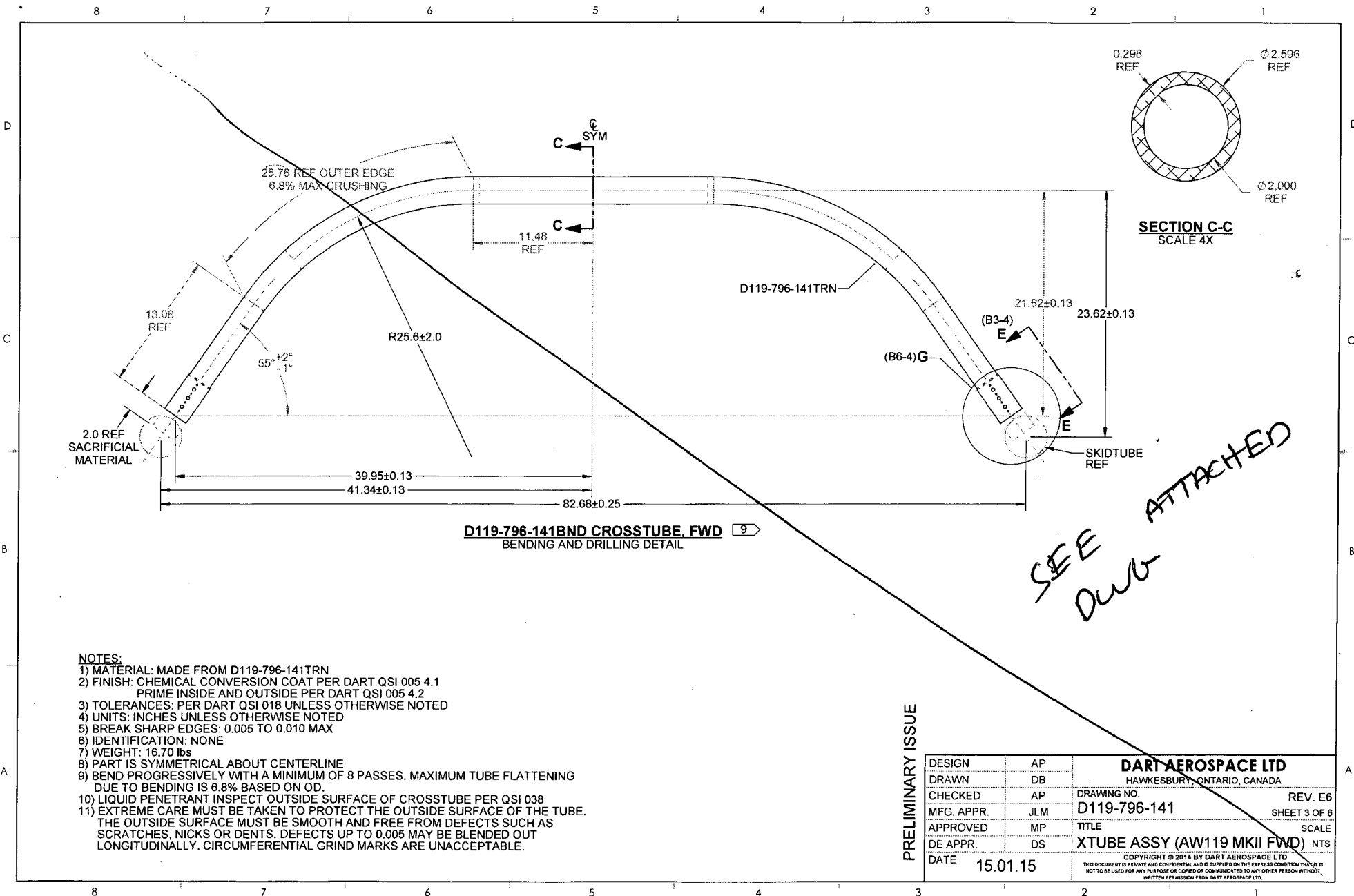
PRELIMINARY ISSUE

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	JLM	D119-796-141	SHEET 1 OF
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



PRELIMINARY ISSUE

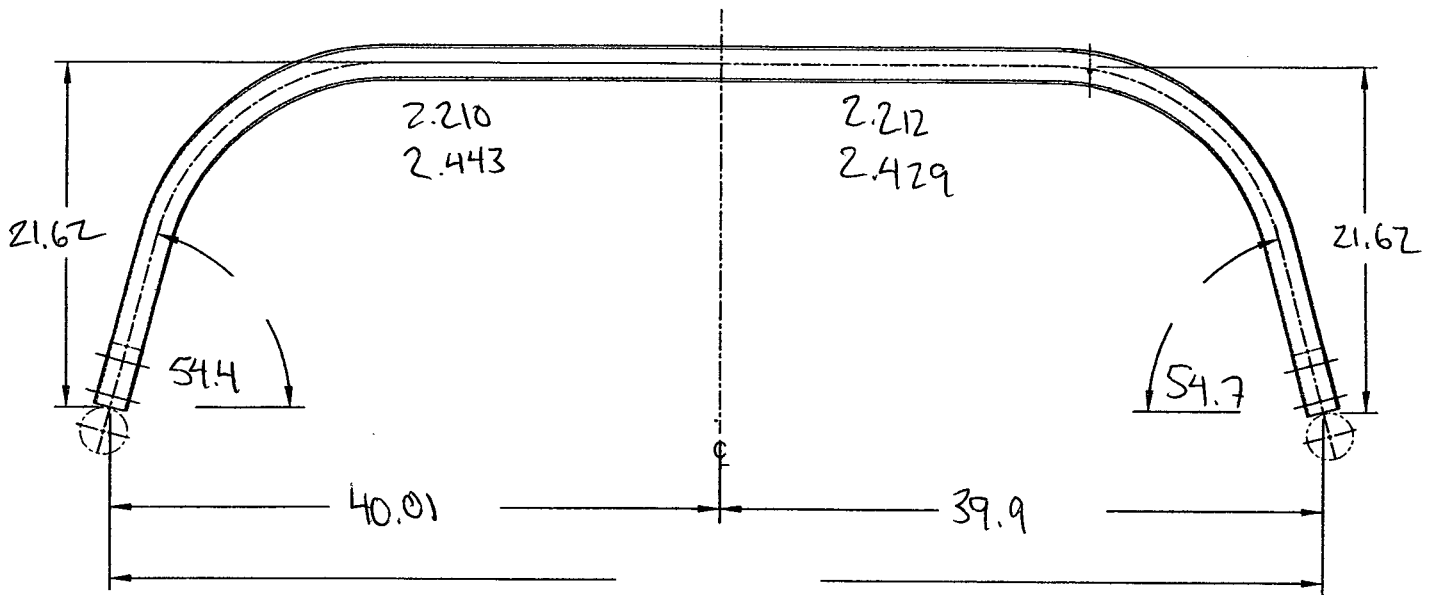
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DB		
CHECKED	AP	DRAWING NO.	REV. E6
MFG. APPR.	JLM	D119-796-141	SHEET 2 OF 6
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



SEE ATTACHED DWG

DART AEROSPACE LTD		Work Order:	
Description:		Part Number:	
Inspection Dwg:	Rev:	Page 1 of 1	

Required Dimension	Min	Max
Height	21.49	21.75
1/2 Span	39.82	40.08
Angle	54	57
Total Span		
Bending Passes	8	
Crushing	-	6.8%



	Side A	Side B
Bending Passes		
Crushing	5%	4.8%
Comments		
# 2nd FAI First one was lost unavailable who did the First FAI		

QC15 Inspection	DD
Date	15-2-5

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	
D	12.02.15	Added bending passes and crushing	KJ	
E	12.03.07	Revised comments table	KJ	

**skyservice****Work Order Traveler**

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO22512	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: P027244
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN: 0	CSN: 0	TSO: 0	

Task:	Sequence: 0
-------	-------------

Work Required:

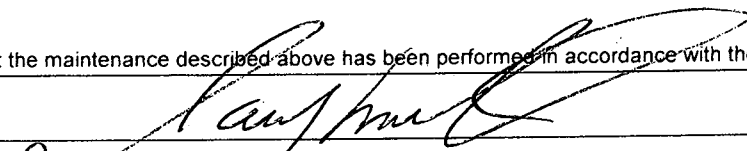
CARRY OUT NDT ON THE FOLLOWING FWD CROSSSTUBS - ID # D119-796-141
WORK ORDER ID'S = 128659,

CARRY OUT NDT ON THE FOLLOWING FWD CROSSSTUBS - ID # D407-667-105
WORK ORDER ID'S = 128045, 128061, 128044,

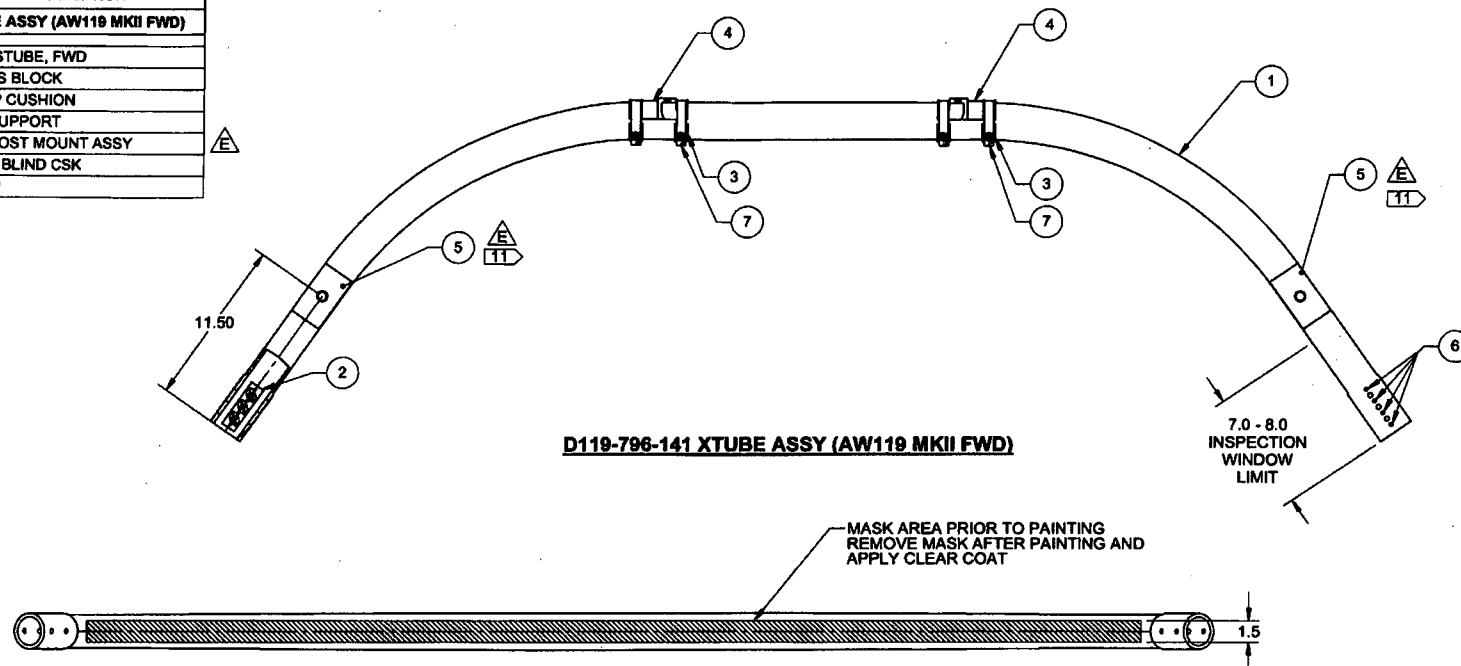
Action Taken:	Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE IAW ASTM E1417.M13 ANY SUSPECT INDICATIONS VERIFIED BY EDDY CURRENT	28 JAN 15	

Description	Location	P/N	Qty	Batch	S/N Off	S/N On
LPE - ARDROX		970 P25 E		023/2131		
BLACK LIGHT		SINT-20990 N				
EDDY CURRENT		NORTEC SDO5		S/NT-20656	CAL DUE	30 JAN 15

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: 28 JAN 2015
Name: CARY SMITH		

ITEM	QTY	P/N	DESCRIPTION
	X	D119-796-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-796-141BND	CROSSTUBE, FWD
2	4	D2873-043	RADIUS BLOCK
3	4	D5123-3	CLAMP CUSHION
4	2	D5124-1	FWD SUPPORT
5	2	D5152-041	FWD POST MOUNT ASSY
6	16	CR3212-4-07	RIVET, BLIND CSK
7	4	MS21920-24	CLAMP



RELEASED

2015 FEB 09

ECN 15-516 42

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: MASK UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA), PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.38 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) AFTER FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'NWIPE DEGREASER. APPLY A 0.100 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4° OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'NWIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100 MIN THK. LOCATE D5152-041 USING TOOL DT10089.

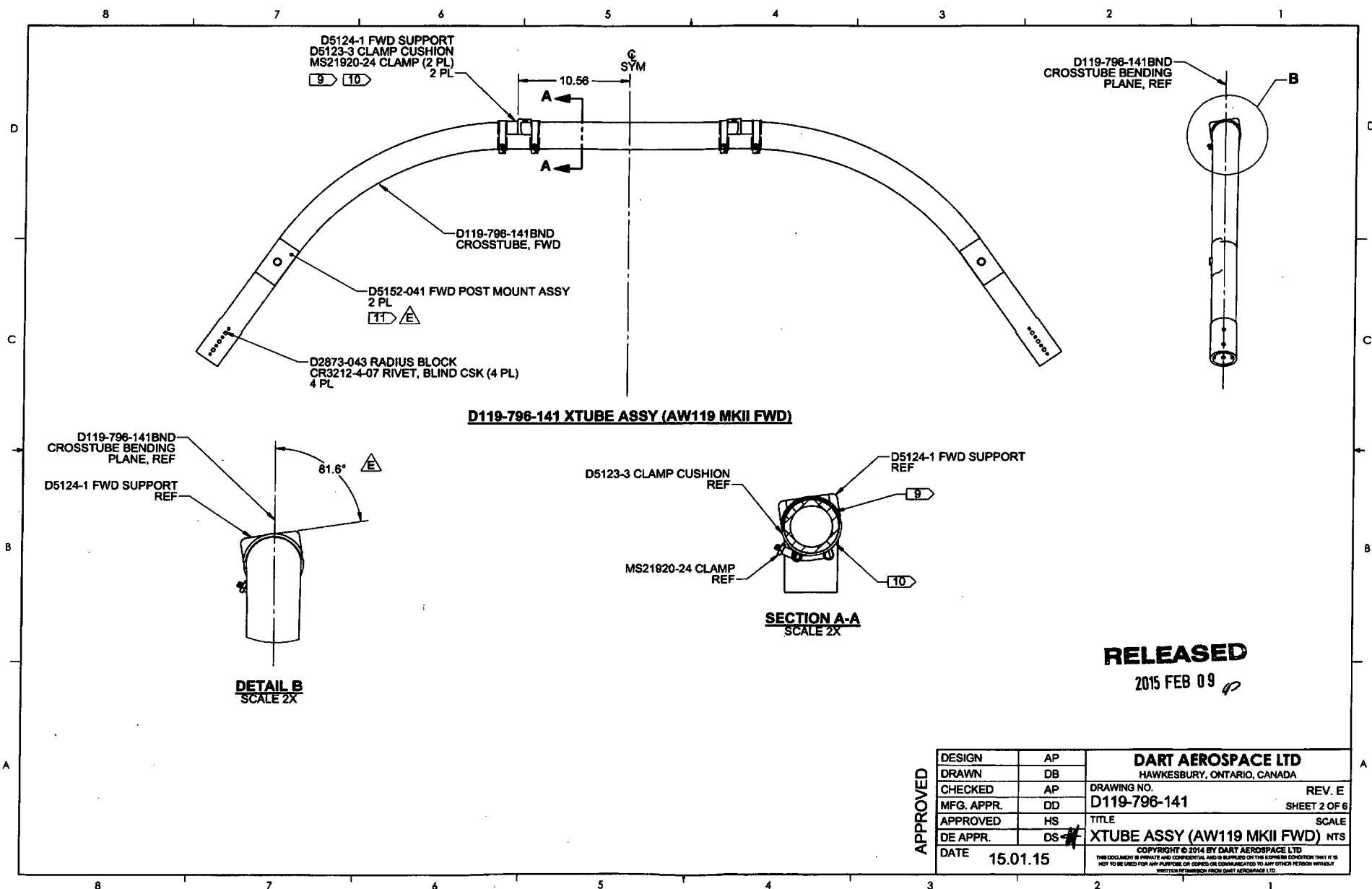
E	D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (B7-2) DIMENSIONED FROM NEW DATUM	DB	15.01.15
D	ADD D5150-1 STEP POST (2X), MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141 TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DB		
CHECKED	AP	DRAWING NO.	
MFG. APPR.	DD	D119-796-141	
APPROVED	HS	TITLE	
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD) NTS	
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMBINED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

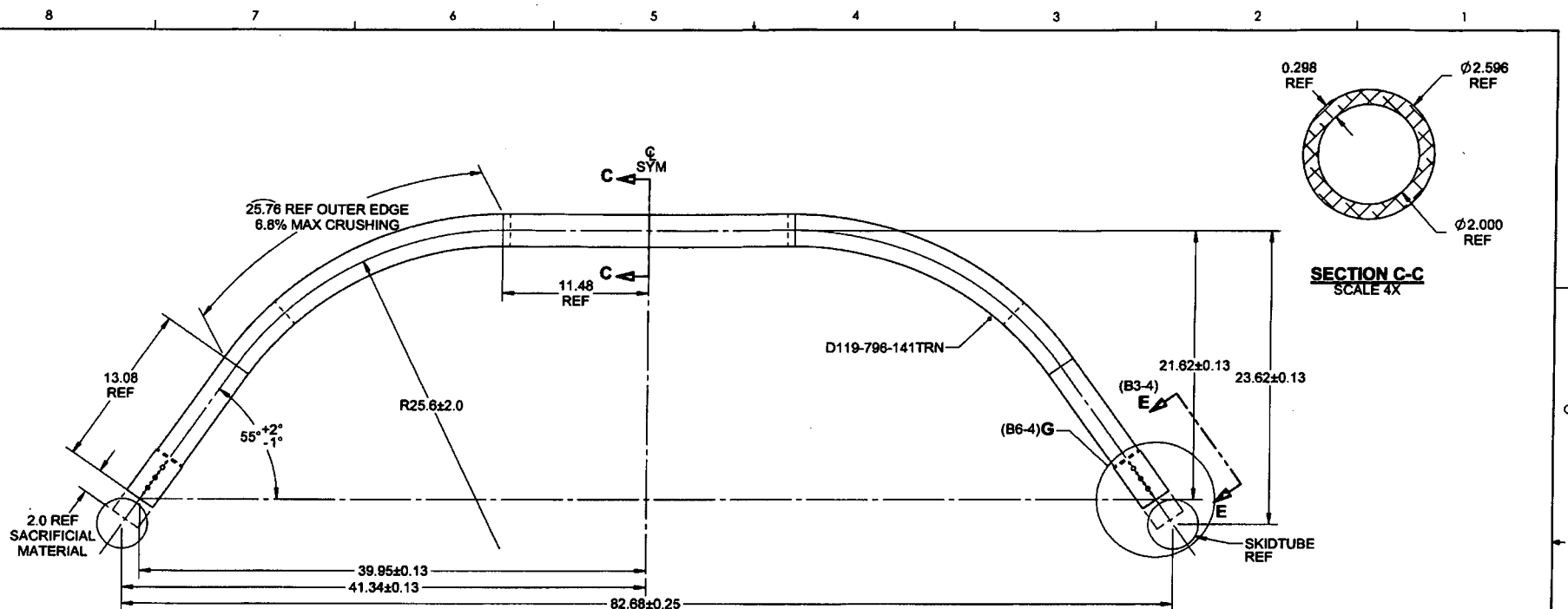
APPROVED

REV. E
SHEET 1 OF 6

SCALE

NTS





D119-796-141BND CROSSTUBE, FWD 9
BENDING AND DRILLING DETAIL

NOTES:

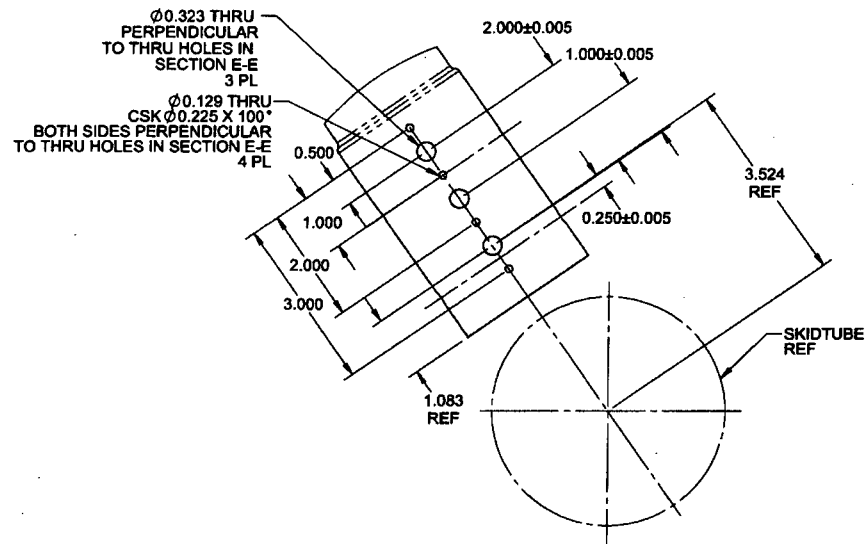
- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

RELEASED

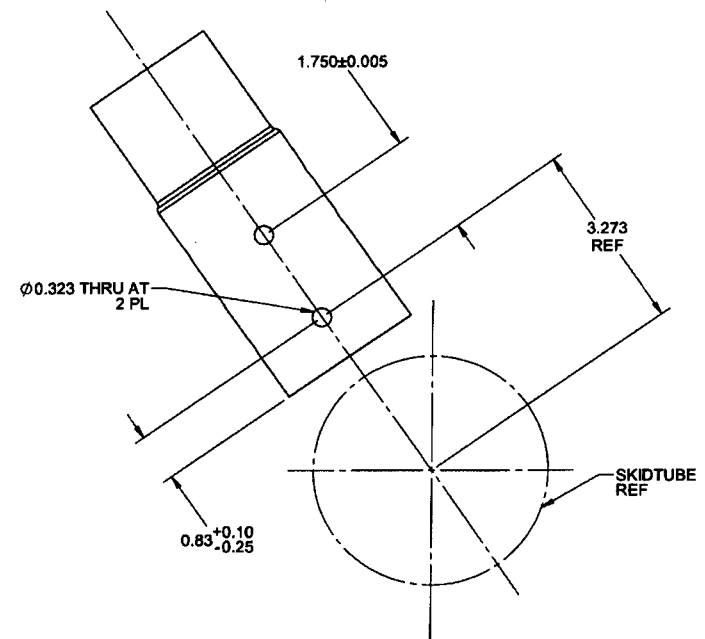
2015 FEB 09

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DB		
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	DD	D119-796-141	SHEET 3 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

APPROVED



DETAIL G (C2-3)
SCALE 4X

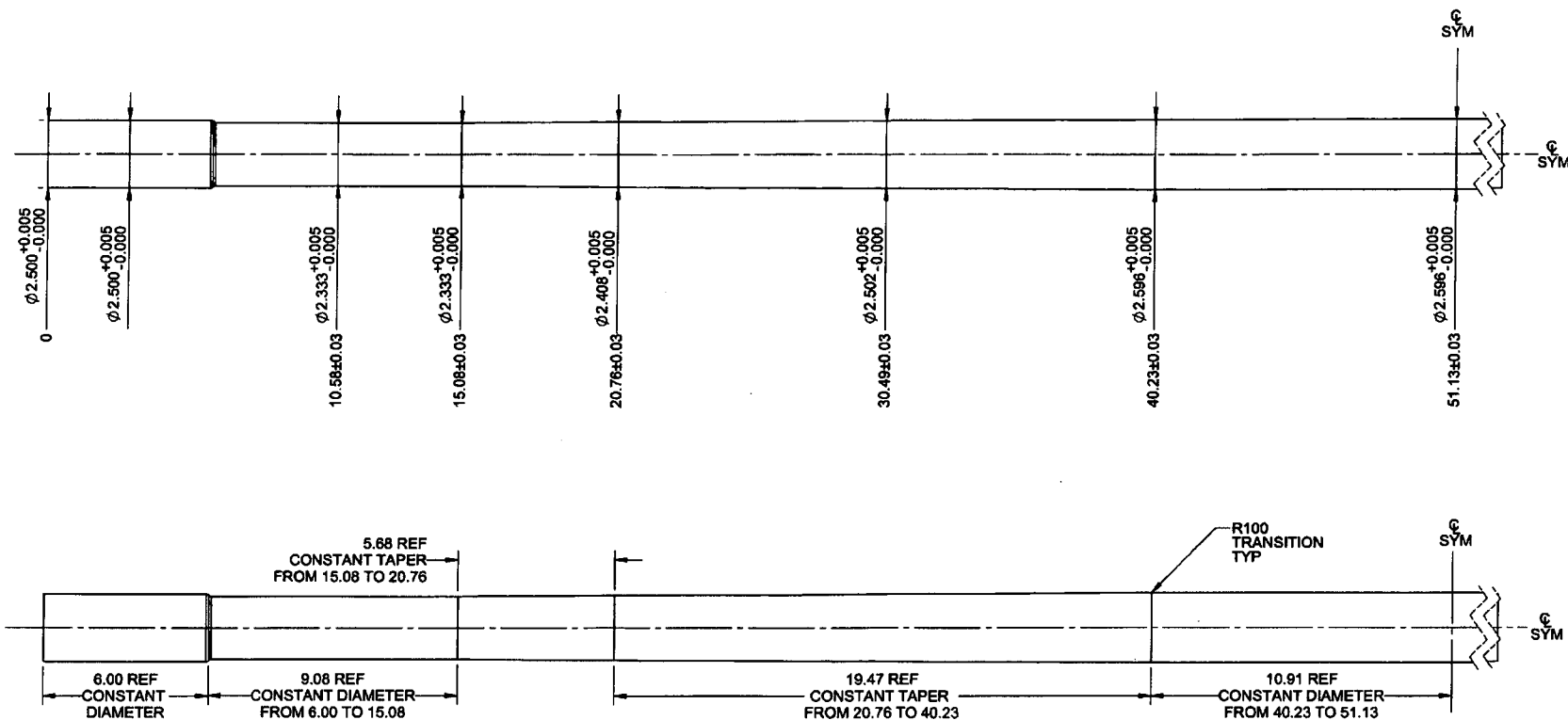


SECTION E-E (C2-3)
SCALE 2X

RELEASED

2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 4 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
	DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR ORIGIN OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D119-796-141TRN CROSSTUBE, FWD

RELEASED

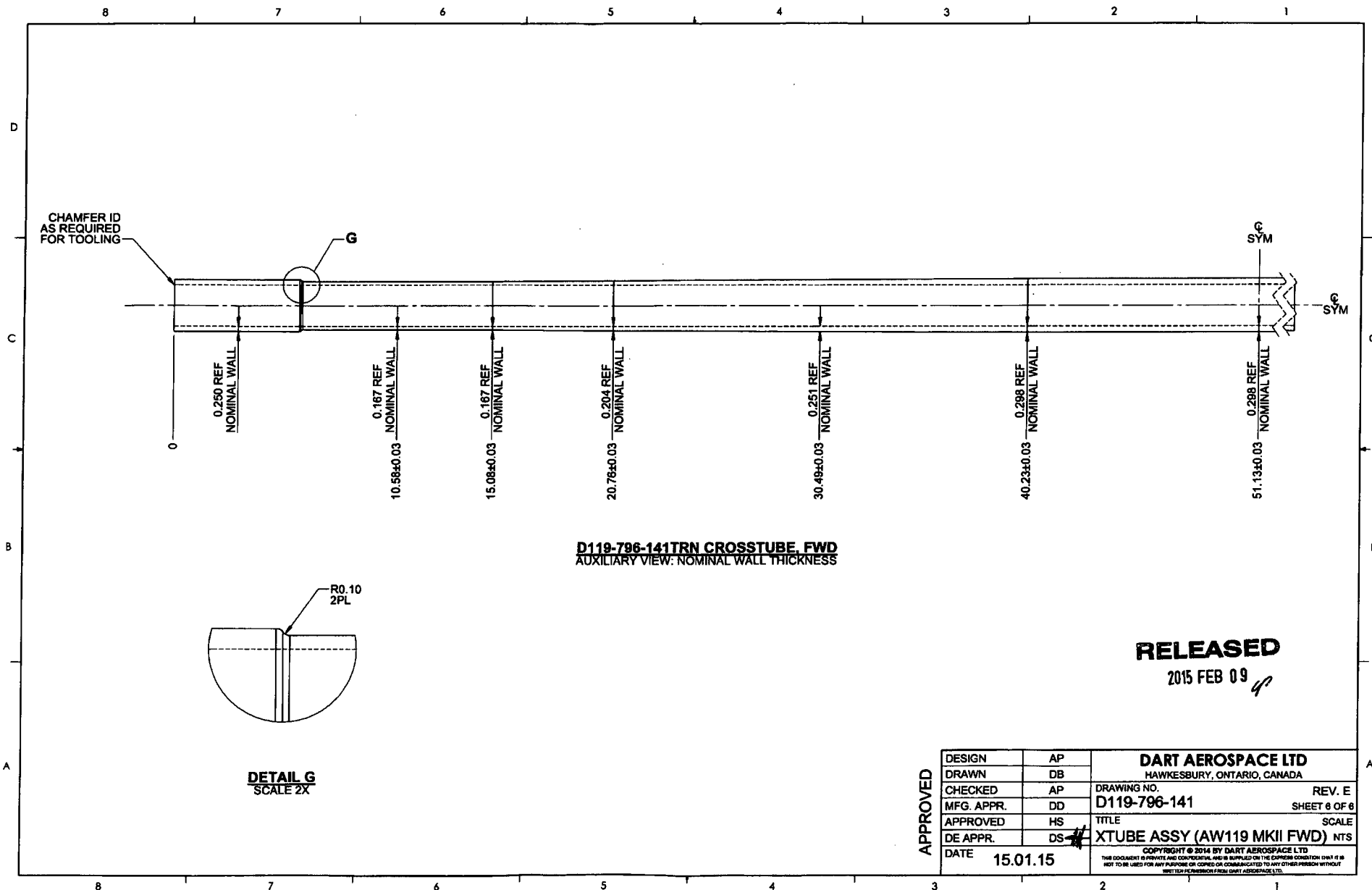
2015 FEB 09

NOTES:

- 1) MATERIAL: MANUFACTURE FROM D6005-103
FINISHED LENGTH = 102.26 ±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE

APPROVED

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	DD	D119-796-141	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS BEING USED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



Work Order ID 128659

128659

Rev E Drawn by S. 02/13
PRELIMINARY ISSUE
 Page 1

Wednesday, January 21, 2015 10:18:44 AM

Item ID: D119-796-141



Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 1/21/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MCS Date: 15-01-21

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D119-796-141	Rev. E A.R. 15.02.12								
120	Packaging	0.00							
120									
Packaging	Memo	0.00							
Packaging									
130	BENDING MACHINE - CROSSTUBES	0.00							
130									
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D119-796-141 using CNC bender program								
140	QC15- Crosstube Dimensional Check	0.00							
140									
QC	Memo	0.00							
Quality Control									

BL/15-01-21
 DAS 03 15-1-21

Work Order ID 128659

128659

Page 2

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/2015 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/21/2015 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150	Crosstubes	0.00				BE		15/01/22	
-----	------------	------	--	--	--	----	--	----------	--

150

Crosstubes

Crosstubes

Memo

***** ENSURE PROPER JIG POSITIONING *****

1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT _____ location #7 & # 212 ULF using jig
 DT _____ and DT _____ as per QSI 10

4-Identify cuff position and Batch # on each and identify tube as per dwg D119-796-141.

5- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***
 Inspect surface damage

6- Deburr and realodine cuff.

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Quality Control

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

DAS
38
9-89

JAN 22 2015



POSITIVE RECALL

EFFECTIVE 15-01-21 AUTH MLC

RELEASED DATE

Work Order ID 128659

Wednesday, January 21, 2015 10:18:45 AM

128659

Page 3

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/21/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170		0.00							
170									
HandFXtube	Memo	0.00							AS
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								15-1-28
	1- CLEAN CROSSTUBE WITH WASH'N WIPE								
180	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Liquid Penetrant Inspection as per QSI 038Or								
	Issue P/O: <u>27247</u> LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								

received 1x SP 15-01-29

Work Order ID 128659

Wednesday, January 21, 2015 10:18:45 AM

128659

Page 4

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/21/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200 *200* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D119-796-141	0.00 0.00				1			DAS 38 9-89 JAN 30 2015
210 *210* HandFXtube Hand Finishing Crosstubes	Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1- PRESSURE WASH AND THEN USE WASHH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION	0.00 0.00							BL 15/01/28
220 *220* QC Quality Control	QC7-Inspect Chemical Conversion Coat Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***	0.00 0.00				1			DAS 41 9-89 15-1-30

Work Order ID 128659

128659

Page 5

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/2015 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 1/21/2015 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp DAS
230	SprayPaint	0.00				1			41 9-89
230	Memo	0.00							15-1-30
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Prime inside and outside crosstube as per QSI 005 4.2 PRIMER batch: <u>129807</u> Start time: <u>12:30</u> Finish time: <u>1:00</u> Clear: <u>130762</u>								
240	QC14- Inspect Spray Paint	0.00							
240	Memo	0.00							
QC	Quality Control								

Work Order ID 128659

128659

Page 6

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
Revision ID: Stop *NS2*
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/2015 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 1/21/2015 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
242		0.00							

242

Crosstubes

Crosstubes

Memo

0.00

1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2- Install ~~25152-041~~ with proseal 890 on concave surface, 0.100" MIN thick as per dwg using DT10089

Proseal Batch: _____

EXP: _____

PROSEAL CURE TIME 72 HOURS:

Start: _____

Finish: _____

3- Install radius block as per dwg

4- Mask underside of crosstube as shown as per dwg prior to painting.

244

QC5- Inspect part completeness to step on W/O

0.00

244

QC

Quality Control

Memo

0.00

Work Order ID 128659

128659

Page 7

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
Revision ID: Stop *NS2*
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/2015 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 1/21/2015 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

246	Spray Painting per QSI005 4.2	0.00							
-----	-------------------------------	------	--	--	--	--	--	--	--

246

SprayPaint

Spray Painting

DAS use AXALTA 3.5 HG 9-55 upon 10-20-12

Memo

1- Paint outside crosstube as per QSI 005 4.2

PAINT batch: _____

Start Time: _____

Finish Time: _____

2- Remove masking and apply matte clear coat as per dwg

Matte Clear Batch: _____ N/A

248	QC14- Inspect Spray Paint	0.00							
-----	---------------------------	------	--	--	--	--	--	--	--

248

QC

Quality Control

Memo

0.00

Work Order ID 128659

128659

Page 8

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
 Start Date: 1/21/2015 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 1/21/2015 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

250	Crosstubes	0.00							
-----	------------	------	--	--	--	--	--	--	--

250

Crosstubes	Memo	0.00							
------------	------	------	--	--	--	--	--	--	--

Crosstubes	Assemble as per Dwg D119-796-141								
------------	----------------------------------	--	--	--	--	--	--	--	--

1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2- Install supports, clamp with the proper position with Proseal 890 per dwg D119-796-141 and QSI 015

A/R Proseal 890 Batch: _____
 EXP: _____
 PROSEAL CURE TIME 72 HOURS:
 Start: _____
 Finish: _____

Torque all clamps to 80-100 IN-LBS.

Work Order ID 128659

128659

Page 10

Wednesday, January 21, 2015 10:18:45 AM

Item ID: D119-796-141 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)
Start Date: 1/21/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/21/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
290	Packaging	0.00							
290									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D119-796-141								
300	QC21- Final Inspection - Work Order Release	0.00							
300									
QC	Memo	0.00							
Quality Control									

POSITIVE RECALL
EFFECTIVE 1501.30 AUTH W
RELEASED 8 DATE 15162/13
To Rev E Drawing.

Picklist Print

Page 1

Wednesday, January 21, 2015 10:18:48 AM

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/2015

Required Date: 1/21/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.09.03 NEW ISSUE DD VERF:JLM IPP
REV:B 14.10.15 AS PER REV.B DD VERF:JLM IPP REV:C
14.11.19 AS PER REV.C DD VERF:JLM IPP REV:D 14.12.12
AS PER REV.pd1 DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
CR3212-4-07		Purchased	No				Each	263.0000		16		DAS 41 9-89	
CR3212-4-07									**			15-1-30	
CHERRY RIVET													

Location	Loc Qty	Loc Code
ST320	263	
m126320	63	
m131317	200	

D119-796-141TRN

Manufactured No

B128173

D119-796-141TRN

Crosstube Turning Detail

**

P JW 15-01-21

Location	Loc Qty	Loc Code
LG	4	
126937	1	
126938	1	
126939	1	
126940	1	

D2873-043

Manufactured No

D2873-043

Nut Plate Assembly

**

DAS
41
9-89 15-1-30

Location	Loc Qty	Loc Code
LG052	16	
125127	16	

4

Picklist Print

Wednesday, January 21, 2015 10:18:48 AM

Page 2

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/2015

Required Date: 1/21/2015

Start Qty: 1.00

Required Qty: 1.00

D5123-3 Manufactured No

Each 92.0000 4

D5123-3

Clamp Cushion

Location

Loc Qty

Loc Code

lg55

92

126747

80

127133

12

D5124-1 Manufactured No

Each 7.0000 2

D5124-1

Fwd Support

Location

Loc Qty

Loc Code

LG053

2

123809

2

LG055

5

127135

5

D5150-1 Manufactured No

Each 12.0000 2

D5150-1

Step Post

Location

Loc Qty

Loc Code

prelim

12

124084

3

127170

9

D5152-041

FWD POST MOUNT ASSY

Picklist Print

Wednesday, January 21, 2015 10:18:48 AM

Work Order ID: 128659

128659

Parent Item: D119-796-141

D119-796-141

Parent Item Name: Fwd Crosstube, STD w/o Peg Steps (MKII)

Start Date: 1/21/2015

Required Date: 1/21/2015

Start Qty: 1.00

Required Qty: 1.00

MS21920-24

Purchased

No

Each

74.0000

4

MS21920-24

Clamp

Location

Loc Qty

Loc Code

FG

2

117998

2

LG050

72

108258

1

120079

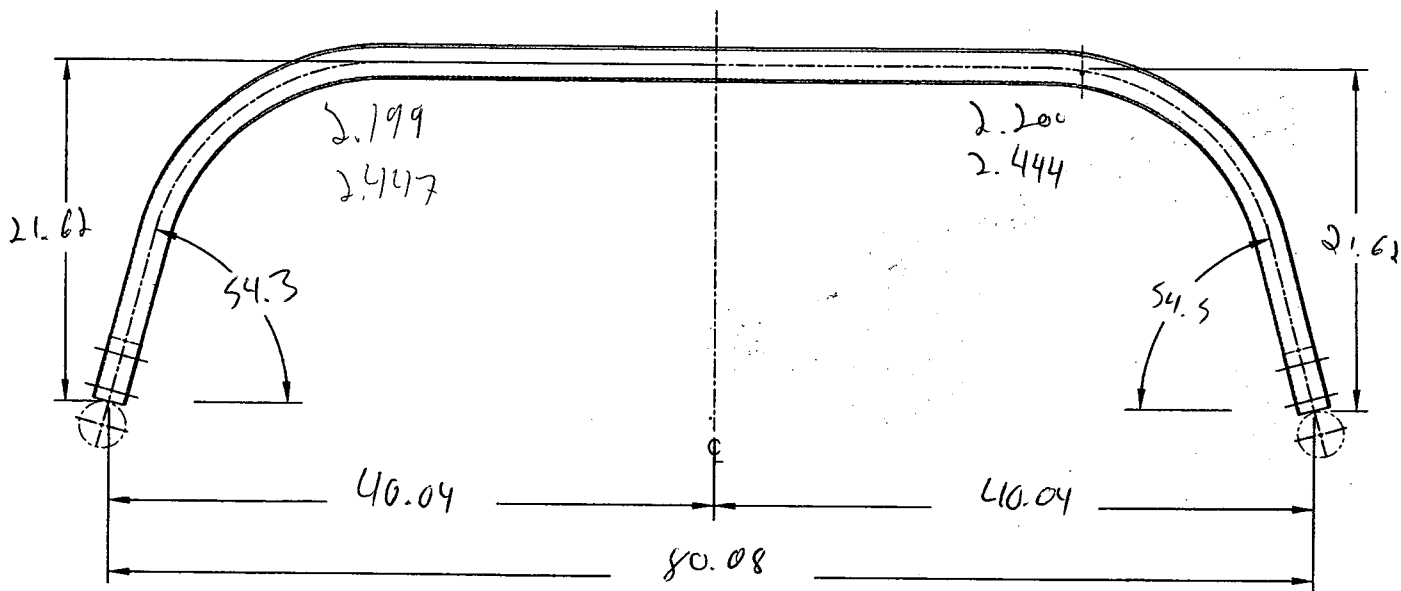
21

m129317

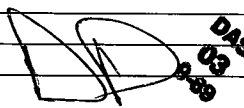
50

DART AEROSPACE LTD		Work Order: 128659
Description:		Part Number:
Inspection Dwg:	Rev:	Page 1 of 1

Required Dimension	Min	Max
Height	21.49	21.75
1/2 Span	39.82	40.08
Angle	54	57
Total Span	79.64	80.16
Bending Passes	8	
Crushing		6.8%



	Side A	Side B
Bending Passes	9	13
Crushing	5.3%	5.1%
Comments		

QC15 Inspection	 DAS 03 0-03
Date	

15-1-21

Rev	Date	Change	Revised by	Approved
A		New Issue		
B	06.09.19	Reformat; QC level revised	KJ/JM	
C	07.02.06	Reformat	KJ/JM	
D	12.02.15	Added bending passes and crushing	KJ	
E	12.03.07	Revised comments table	KJ	

**skyservice****Work Order Traveler**

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO22512	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO27244
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN: 0	CSN: 0	TSO: 0	
Task:			Sequence: 0

Work Required:

CARRY OUT NDT ON THE FOLLOWING FWD CROSSTUBES - ID # D119-796-141
WORK ORDER ID'S = 128659, SP15-01-29

CARRY OUT NDT ON THE FOLLOWING FWD CROSSTUBE = ID # D407-667-105
WORK ORDER ID'S = 128045, 128061, 128044,

Action Taken:	Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE IAW ASTM E1417.M13 ANY SUSPECT INDICATIONS VERIFIED BY EDDY CURRENT	28 JAN 15	

Description	Location	P/N	Qty	Batch	S/N Off	S/N On
LPT - ARDROX		970 P25 E		023/2131		
BLACK LIGHT		SINT-20990 N				
EDDY CURRENT		NORTEC SDOS		SINT-20656	CAL DUE	30 JAN 15

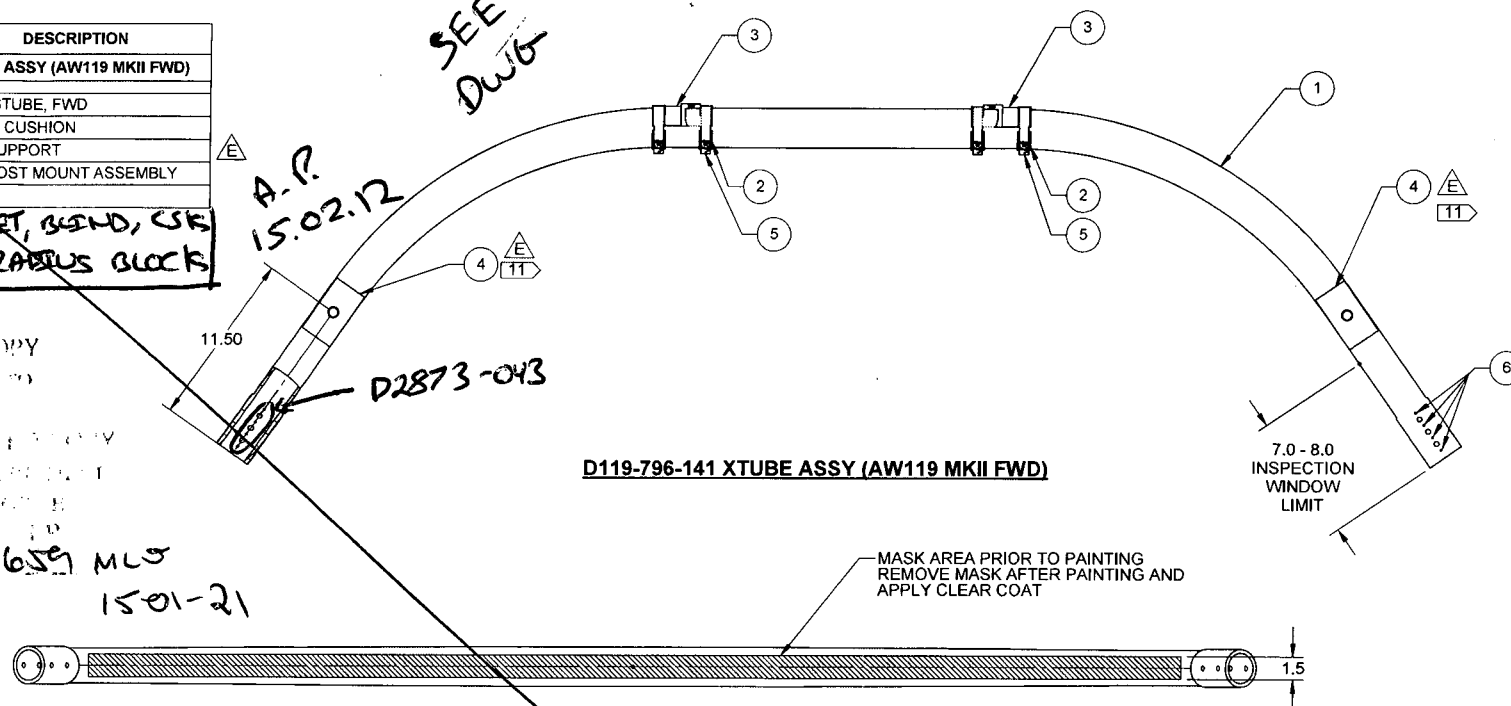
DOT APP 19 53-89
JAN 30 2015

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date: 28 JAN 2015
Name: CARY SMITH		

ITEM	QTY	P/N	DESCRIPTION
	X	D119-796-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-796-141BND	CROSSTUBE, FWD
2	4	D5123-3	CLAMP CUSHION
3	2	D5124-1	FWD SUPPORT
4	2	D5152-041	FWD POST MOUNT ASSEMBLY
5	4	MS21920-24	CLAMP
6	16	CR32-4-07	RIVET, 3/16", 45°
7	4	D2873-043	RADIUS BLOCK

COPY
TURN TO
IN
FROM
FIGURE
THAT
WORK
128659 MLC
1501-21



D119-796-141 XTUBE ASSY (AW119 MKII FWD)

MASK AREA PRIOR TO PAINTING
REMOVE MASK AFTER PAINTING AND
APPLY CLEAR COAT

NOTES:

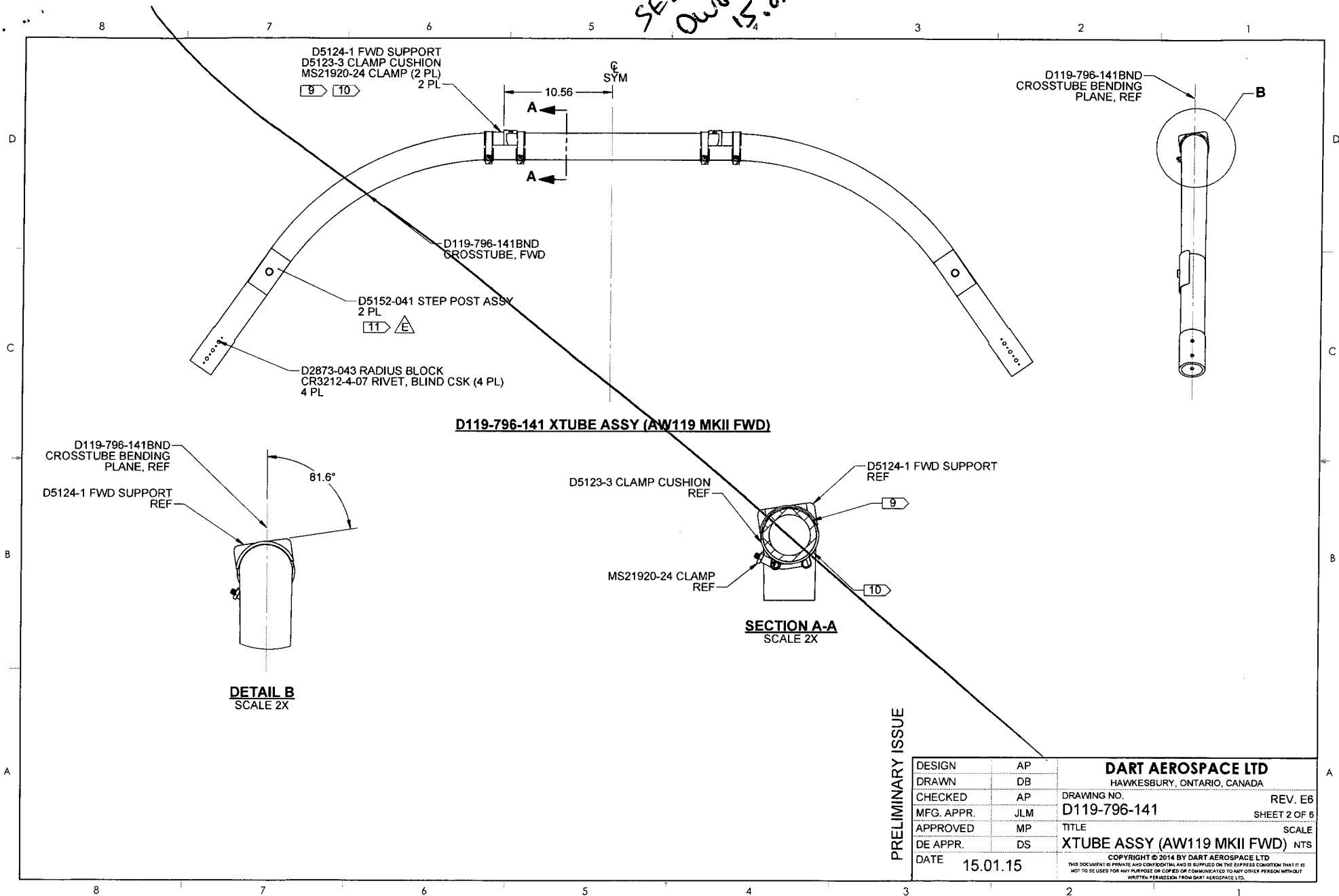
- 1) MATERIAL: N/A
- 2) FINISH: MASK UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA), PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-796-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.26 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) AFTER FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. APPLY A 0.100 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4° OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY, THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100 MIN THK. LOCATE D5152-041 USING TOOL DT10089.

E	D5152-041 STEP POST ASSY WAS D5150-1 STEP POST. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER	DB	15.01.15
D	ADD D5150-1 STEP POST (2X), MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3), CUFF DIAMETER ON D119-796-141TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES, RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D119-796-141 TITLE XTUBE ASSY (AW119 MKII FWD) SCALE NTS COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE REPRODUCED OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DRAWN	DB		
CHECKED	AP		
MFG APPR.	JLM		
APPROVED	MP		
DE APPR.	DS		
DATE	15.01.15		

PRELIMINARY ISSUE

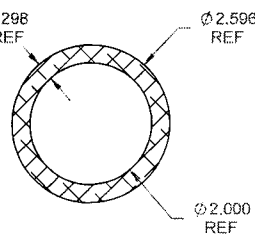
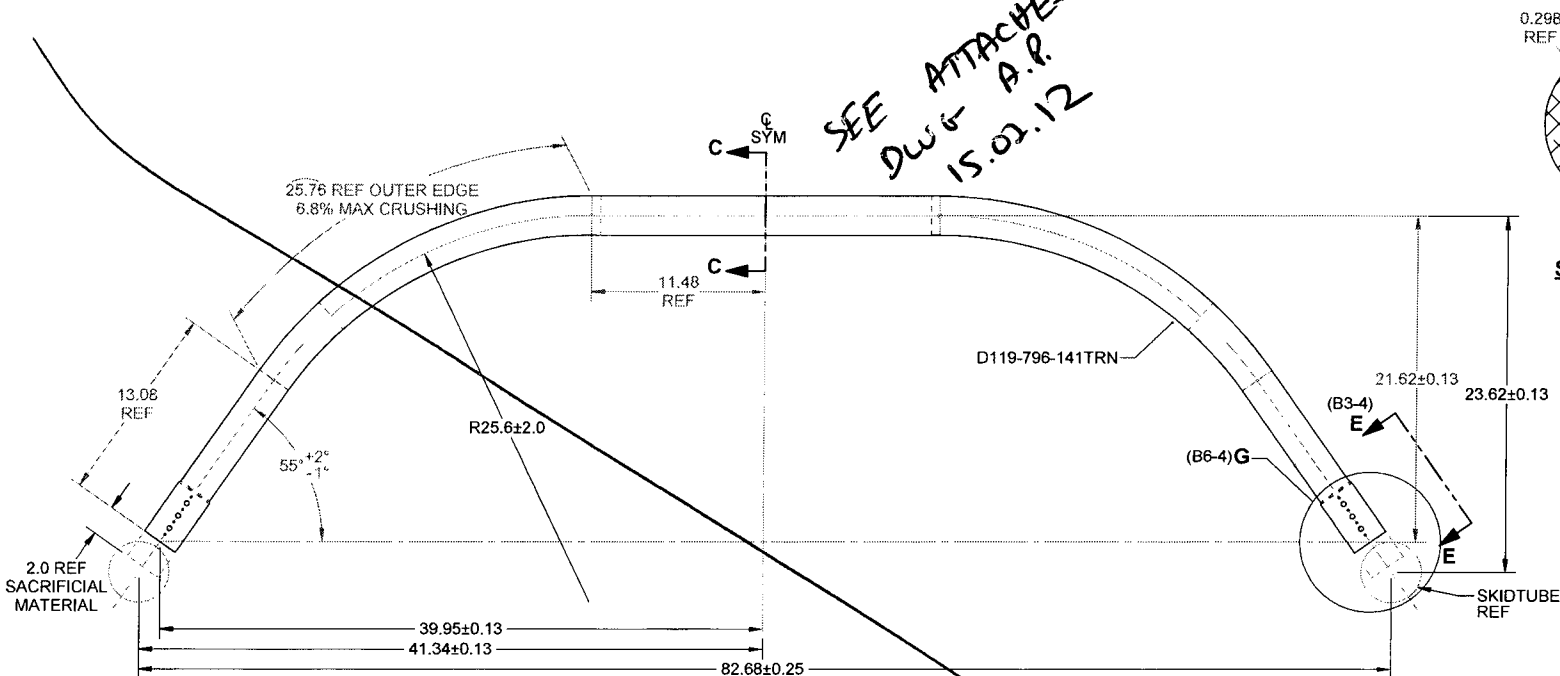
7.0-8.0
INSPECTION
WINDOW
LIMIT

SEE ATTACHED
DWG A.P.
15.02.12



DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E6
MFG. APPR.	JLM	D119-796-141	SHEET 2 OF 6
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

SEE ATTACHED
DWG A.P.
15.02.12



D119-796-141BND CROSSTUBE, FWD 9
BENDING AND DRILLING DETAIL

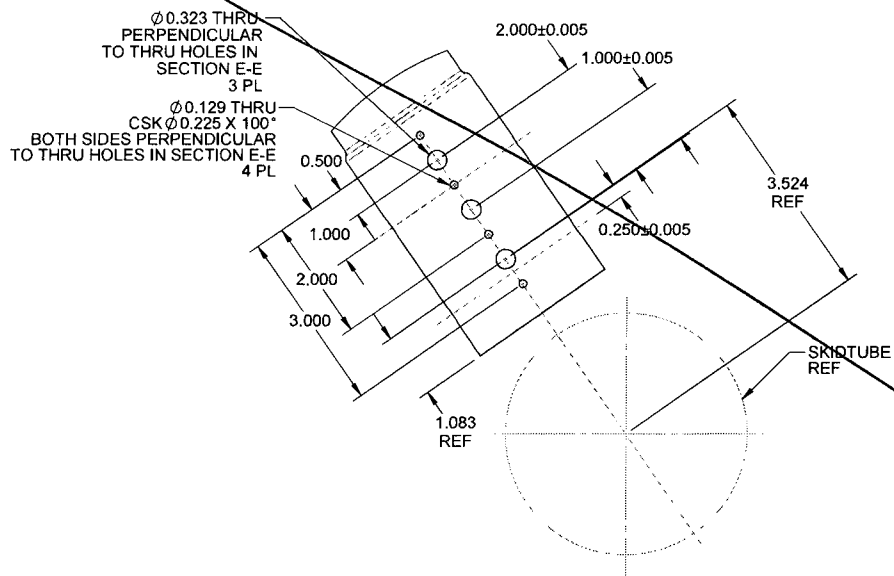
NOTES:

- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

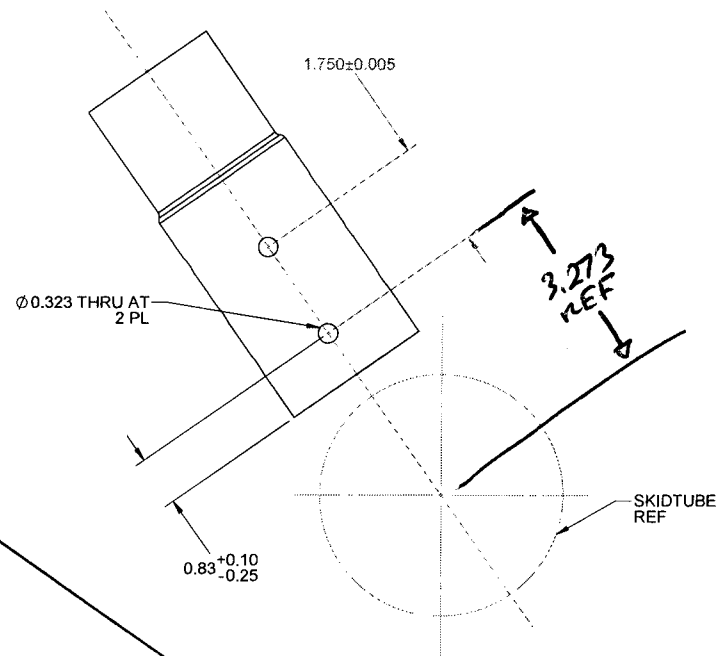
PRELIMINARY ISSUE

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E6
MFG. APPR.	JLM	D119-796-141	SHEET 3 OF 6
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

SEE ATTACHED
DWG A.P.
15.02.12



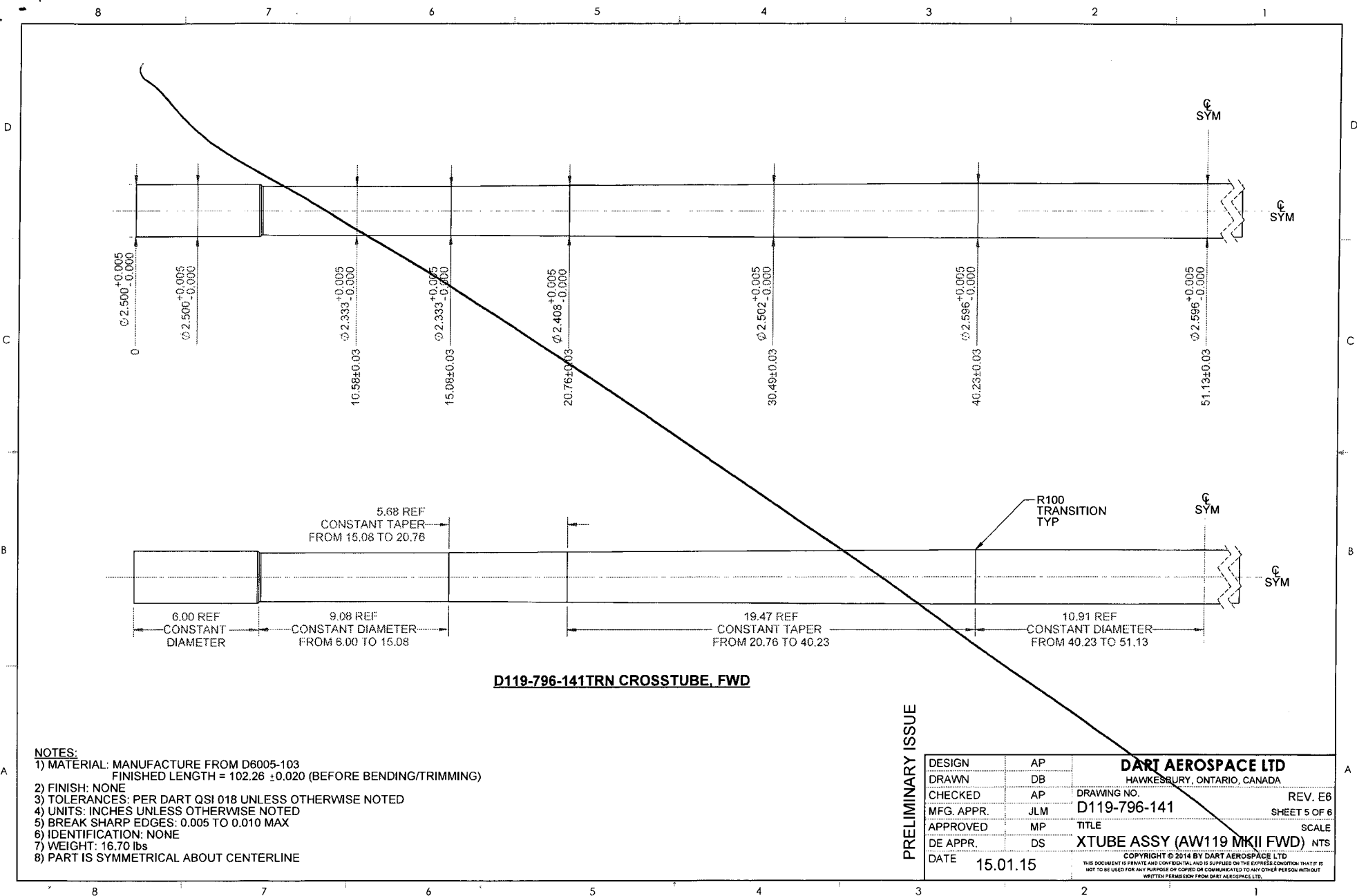
DETAIL G (C2-3)
SCALE 4X

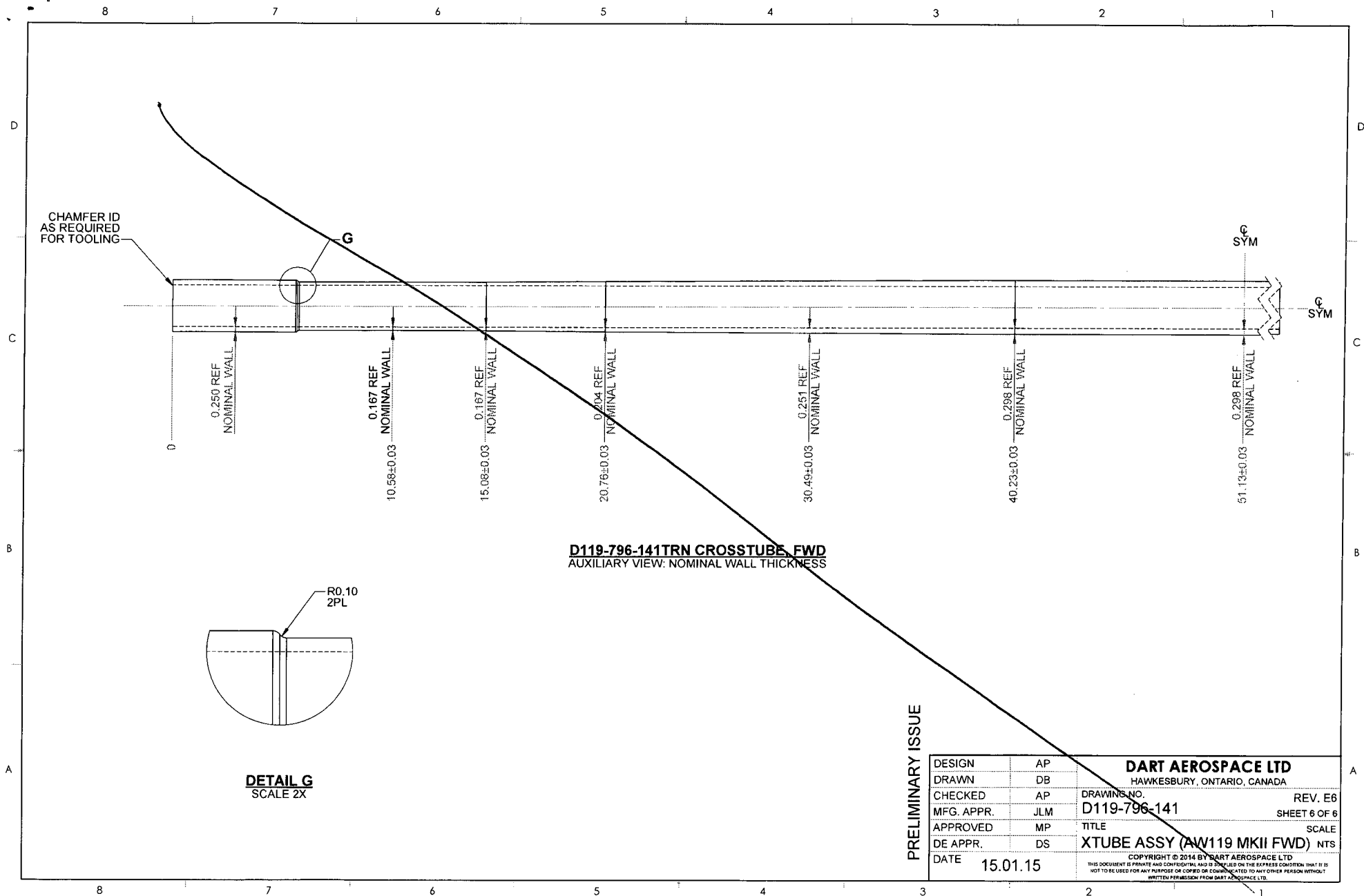


SECTION E-E (C2-3)
SCALE 2X

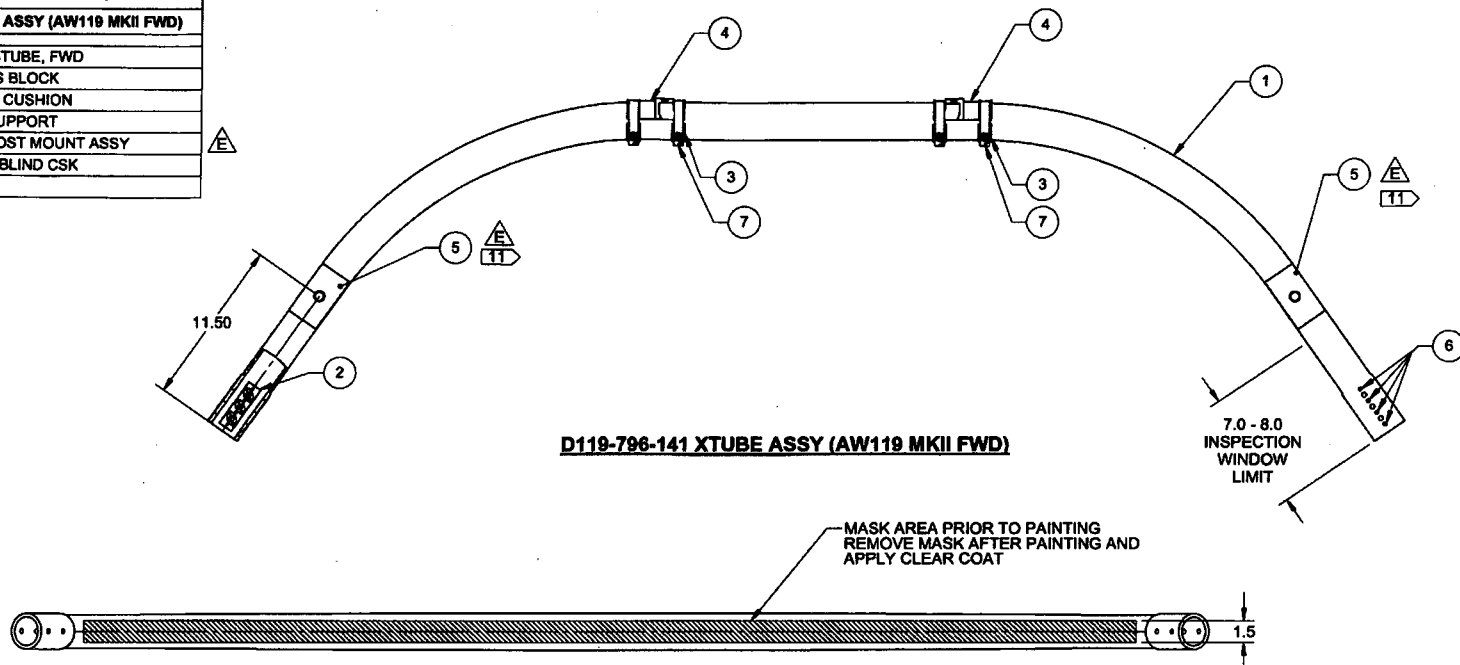
PRELIMINARY ISSUE

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E6
MFG. APPR.	JLM	D119-796-141	SHEET 4 OF 6
APPROVED	MP	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS NOTATION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





ITEM	QTY	P/N	DESCRIPTION
	X	D119-798-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-798-141BND	CROSSTUBE, FWD
2	4	D2873-043	RADIUS BLOCK
3	4	D5123-3	CLAMP CUSHION
4	2	D5124-1	FWD SUPPORT
5	2	D5152-041	FWD POST MOUNT ASSY
6	16	CR3212-4-07	RIVET, BLIND CSK
7	4	MS21920-24	CLAMP



D119-798-141 XTUBE ASSY (AW119 MKII FWD)

RELEASED

2015 FEB 09

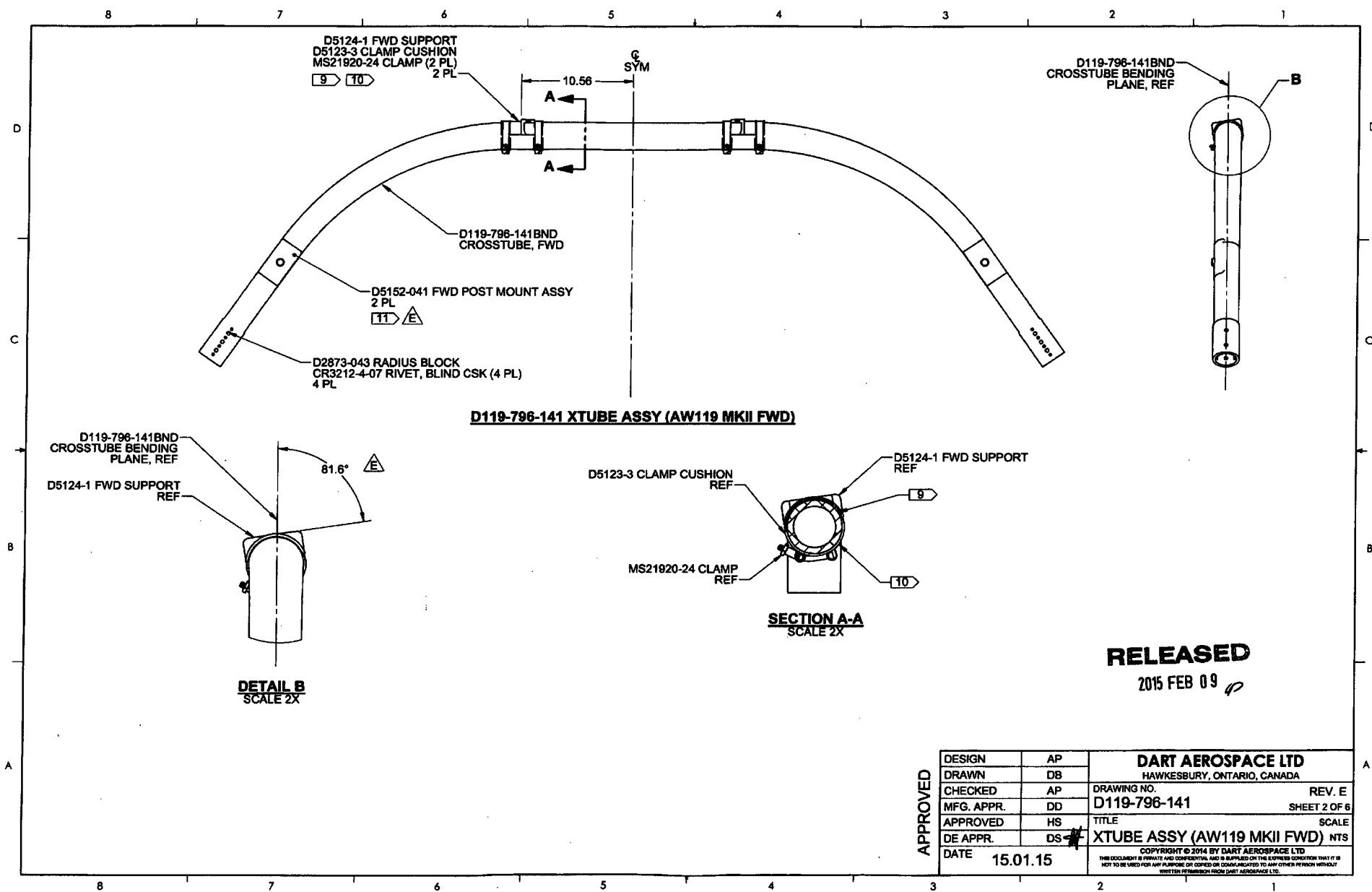
ECN 15-516

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: MASK UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA), PAINT OUTSIDE PER DART QSI 005 4.2
REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-798-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.38 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS.
DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) AFTER FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'NWIPE DEGREASER. APPLY A 0.100 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY, THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'NWIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.100 MIN THK. LOCATE D5152-041 USING TOOL DT10089.

E	D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (B7-2) DIMENSIONED FROM NEW DATUM	DB	15.01.15
D	ADD D5150-1 STEP POST (2X). MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-09, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3). CUFF DIAMETER ON D119-798-141TRN REDUCED TO 2.500, ADDED INSPECTION WINDOW (B7-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-09 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D119-798-141 TITLE XTUBE ASSY (AW119 MKII FWD) NTS DATE 15.01.15 COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PROPRIETARY AND CONFIDENTIAL. AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DRAWN	DB		
CHECKED	AP		
MFG. APPR.	DD		
APPROVED	HS		
DE APPR.	DS	REV. E SHEET 1 OF 6 SCALE	

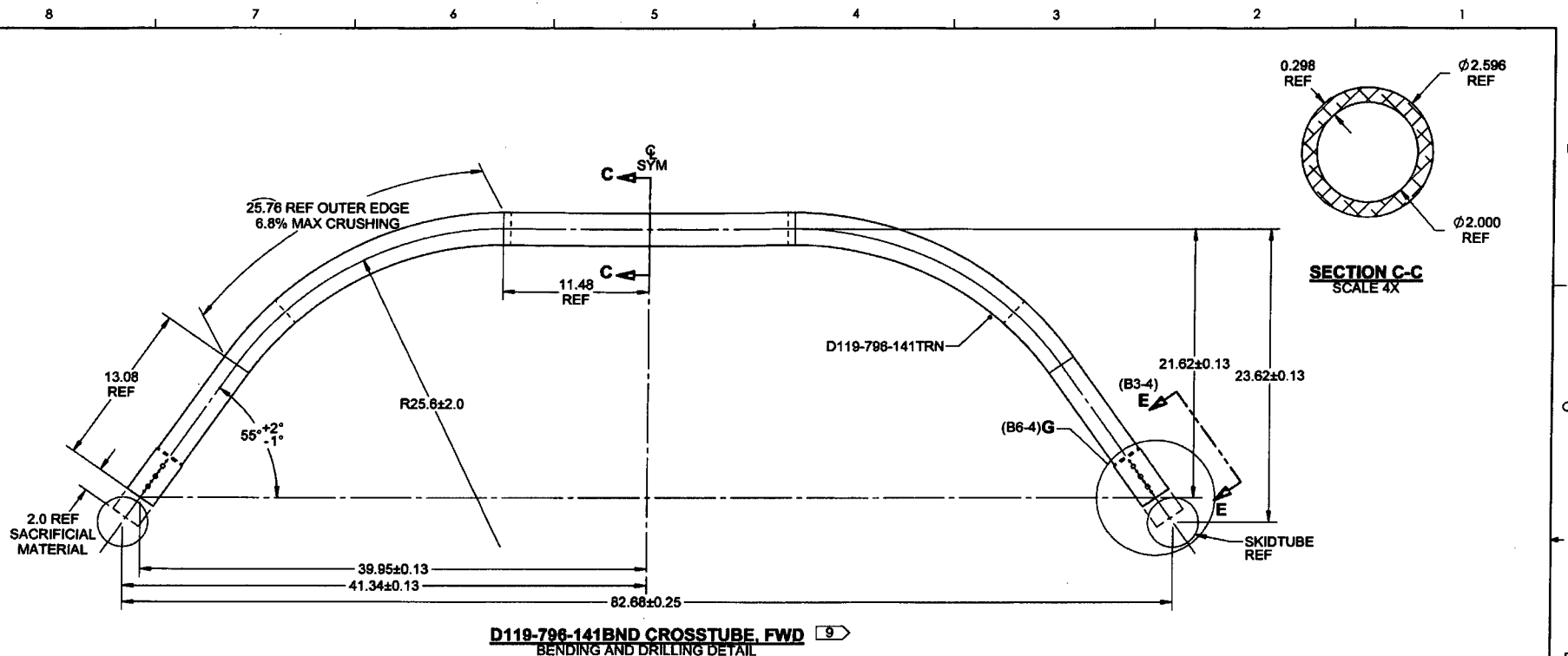
APPROVED



D119-796-141 XTUBE ASSY (AW119 MKII FWD)

RELEASED
2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 2 OF 6
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD) NTS	
	DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D119-796-141BND CROSSTUBE, FWD 9
BENDING AND DRILLING DETAIL

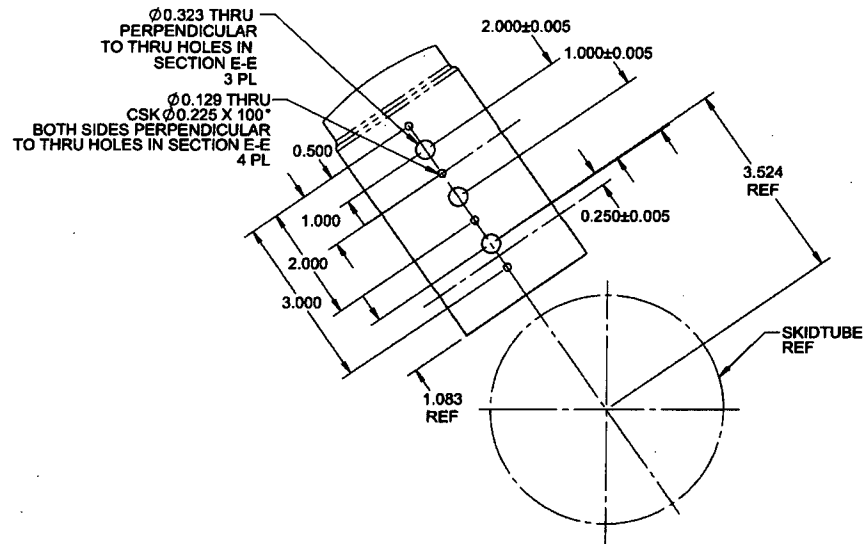
NOTES:

- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

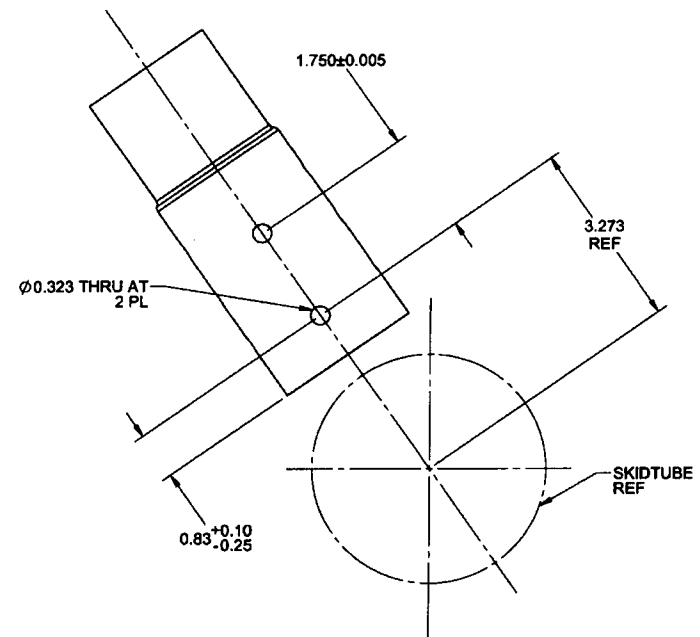
RELEASED

2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 3 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
	DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



DETAIL G (C2-3)
SCALE 4X

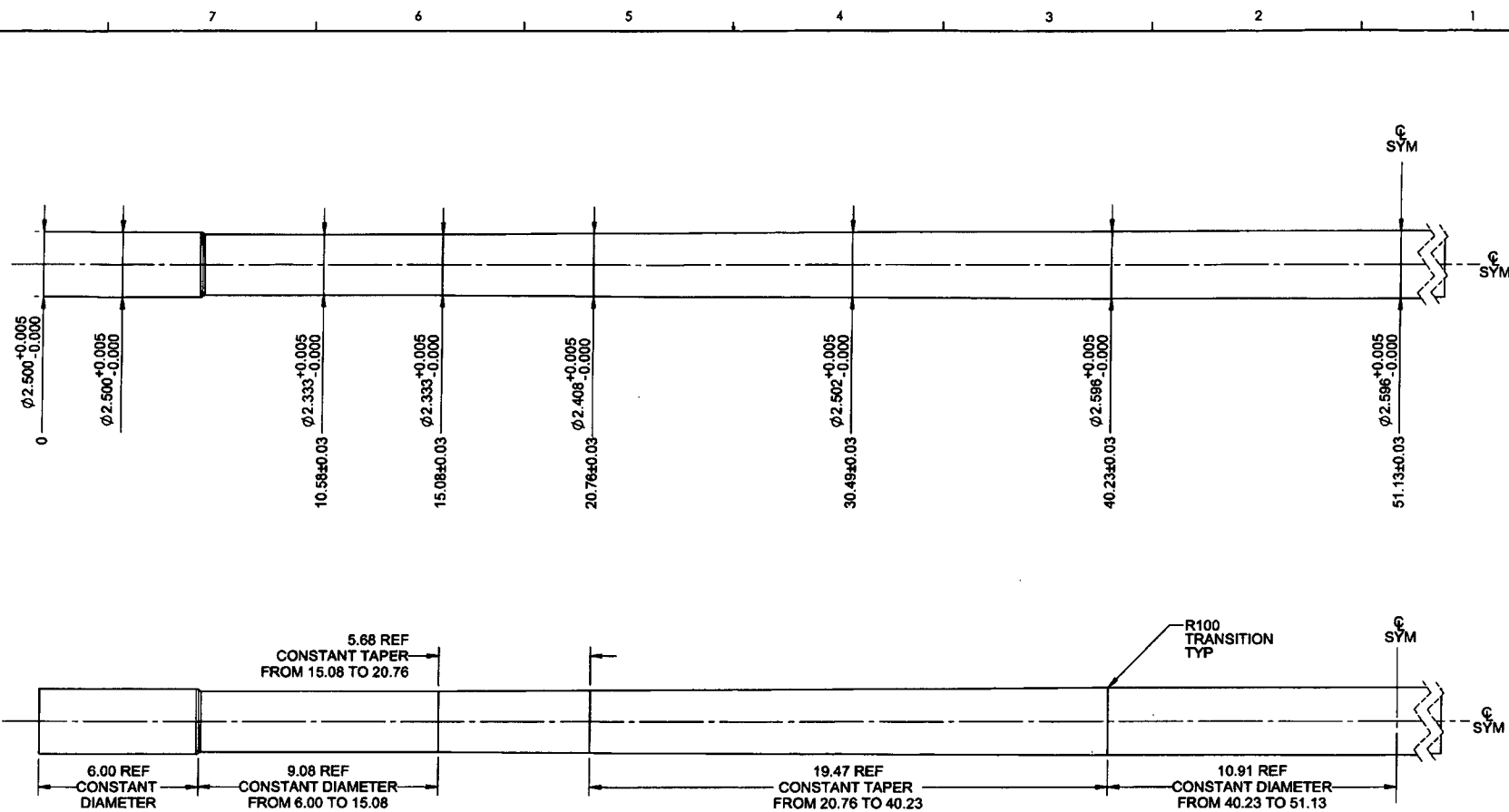


SECTION E-E (C2-3)
SCALE 2X

RELEASED

2015 FEB 09

APPROVED	DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	DB		
	CHECKED	AP	DRAWING NO.	REV. E
	MFG. APPR.	DD	D119-796-141	SHEET 4 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD) NTS	
	DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D119-796-141TRN CROSSTUBE, FWD

RELEASED

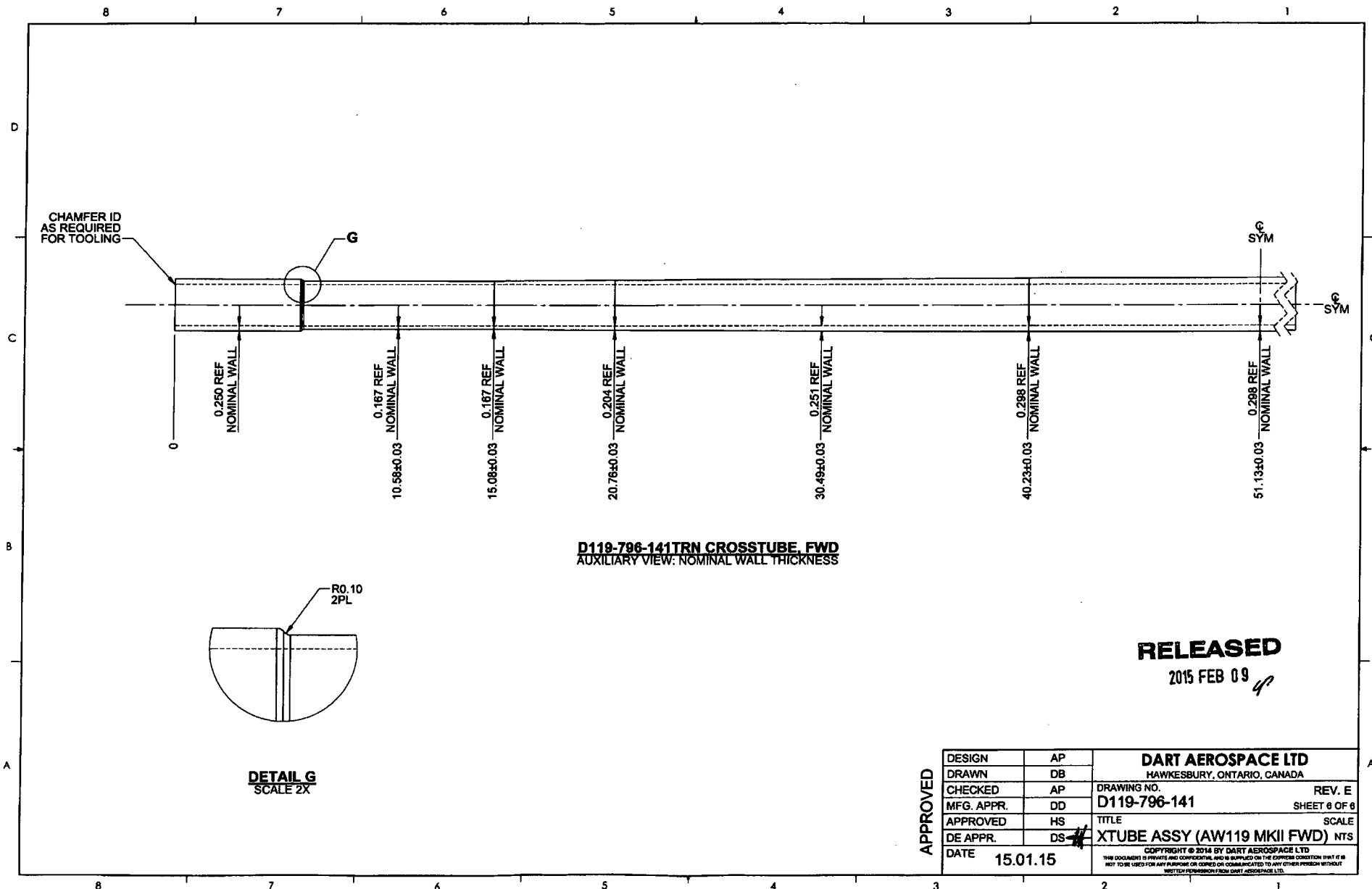
2015 FEB 09

NOTES:

- 1) MATERIAL: MANUFACTURE FROM D6005-103
FINISHED LENGTH = 102.26 ±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE

APPROVED

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	DB	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	DD	D119-796-141	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.01.15	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





Imron® 3.5 HG + High Gloss Polyurethane Topcoat (RH Quality)



GENERAL

DESCRIPTION

A high gloss 3.5 lbs/gal VOC conforming, low HAPS, polyurethane topcoat based upon unique Axalta formulations and resin technology. The resulting finish product provides a brush, roll or sprayable topcoat designed for use in any environment where long term color and gloss retention are desired.

SUGGESTED USES

As a high performance topcoat over suitable primers or properly prepared steel, galvanized steel, stainless steel, aluminum, concrete, concrete block, fiberglass, plastics and wood where:

- Long term color retention is desired
- Long term gloss retention is desired
- Compliance with 3.5 lbs VOC regulations is desired
- Use in corrosive or industrial marine environments is needed
- Application by brush, roll or spray is desired
- Excellent chemical resistance is desired
- Outstanding flexibility is needed
- Faster dry times are desired

COMPATIBILITY WITH OTHER COATINGS

- Aged Imron 3.5 HG + may be re-coated with itself following washing with clean, fresh water – no mechanical surface preparation is required.
- Imron 3.5 HG + can be applied over other Axalta coatings including, but not limited to Imron Industrial Strength primers and other Imron primers, Imron waterborne polyurethane copolymer coatings, Corlar® epoxies, Tufcote® acrylics, and Tufcote alkyd primers.
- Imron 3.5 HG + may be used over most aged and hard-cured coatings in good condition. Testing for lifting, bubbling and adhesion is recommended to assure compatibility with unknown coatings. Contact your Axalta representative for specific recommendations.

NOT RECOMMENDED FOR

Immersion service or floors

PERFORMANCE PROPERTIES

Abrasion & Mechanical	Excellent
Alkalis	Excellent
Humidity	Excellent
Solvents	Excellent
Color & Gloss Retention	Excellent
Acids	Excellent
Salts	Excellent
Weather	Excellent

The products referenced herein may not be sold in your market. Please consult your distributor for product availability.

COLOR

Imron 3.5 HG + consists of a mixing system utilizing 19 tints and 1 binder (3500P™) to specific mixing formulas. Select high-volume factory package colors are also available. Thousands of custom colors can be mixed.